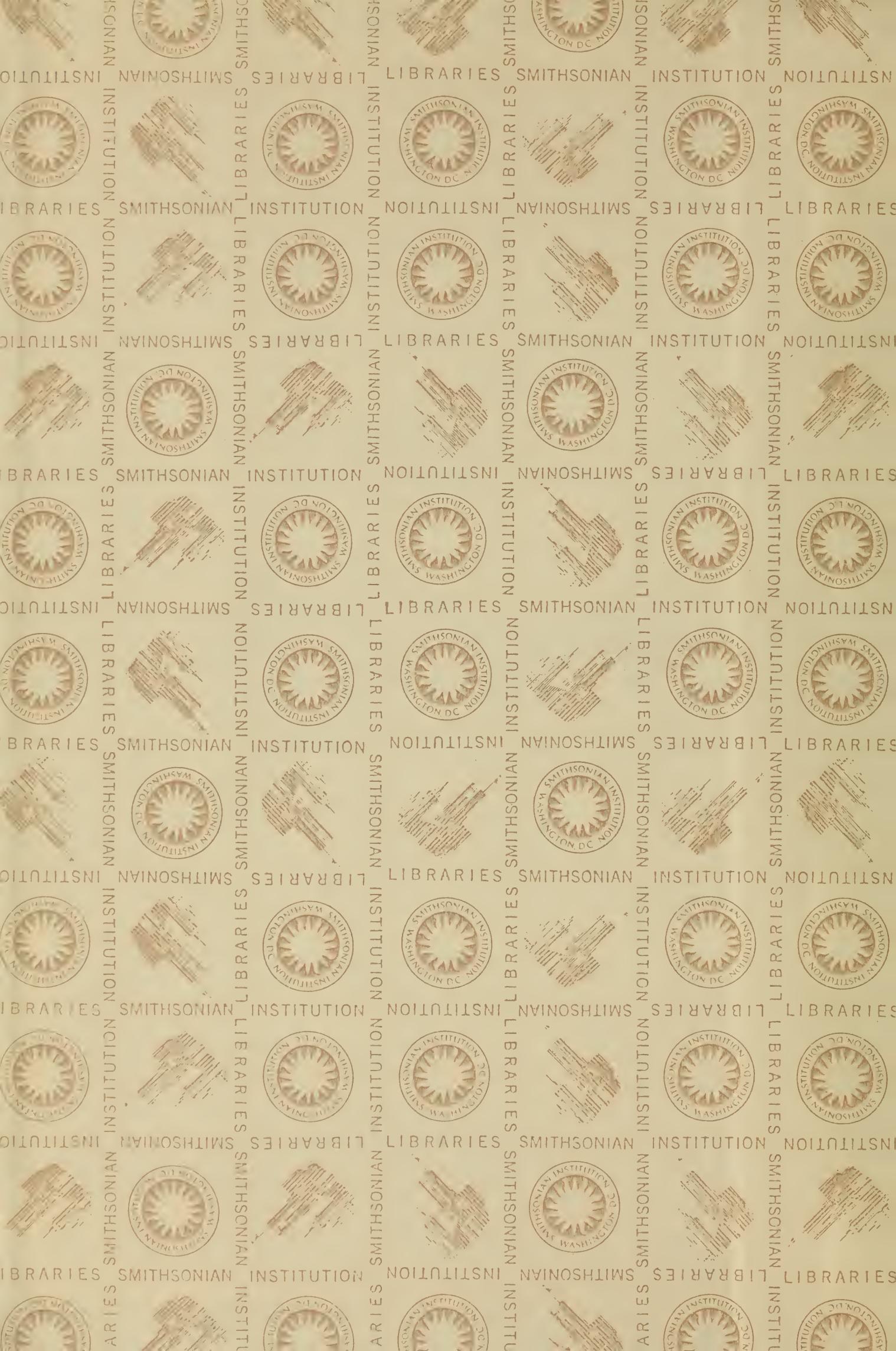
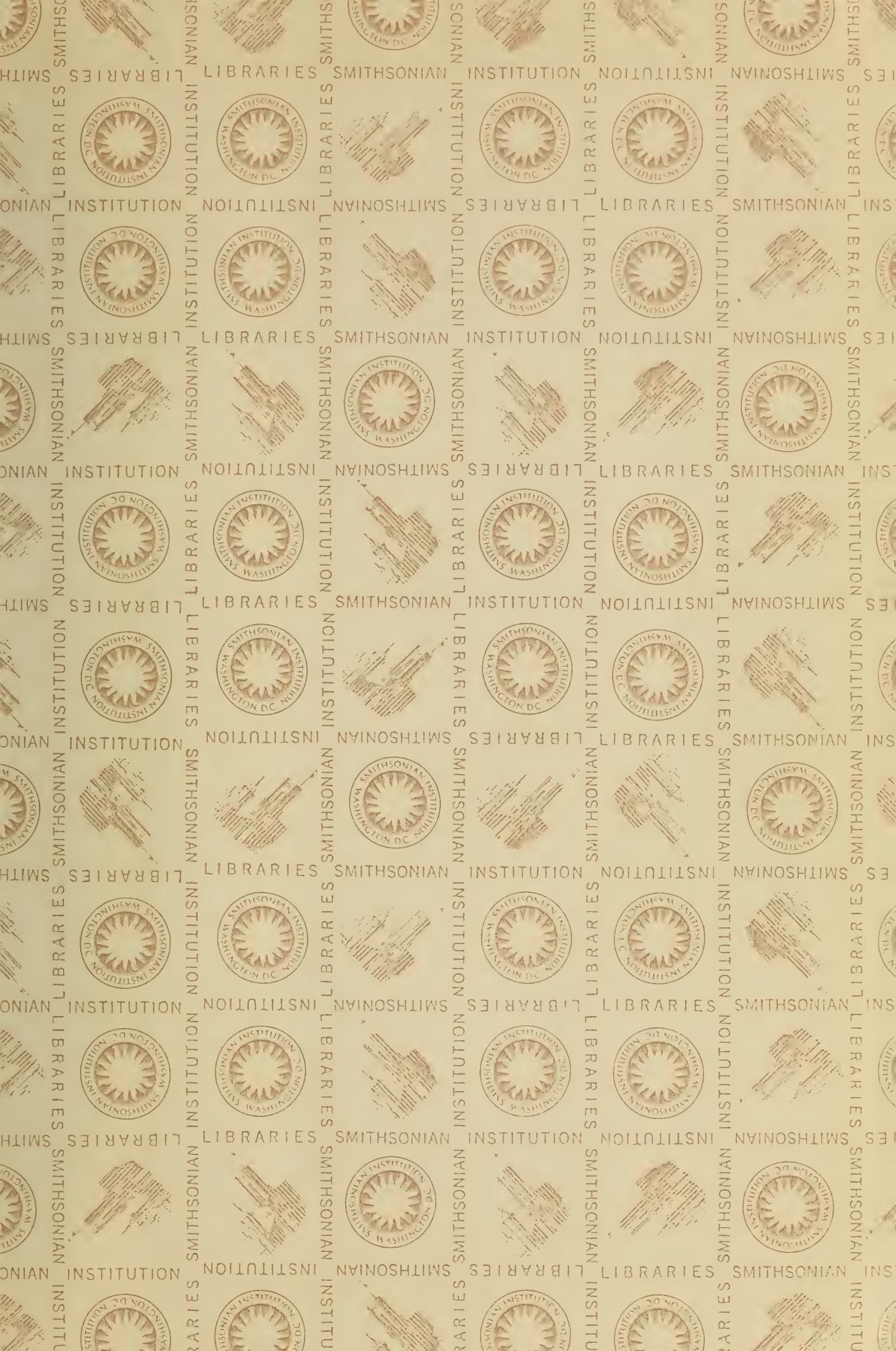


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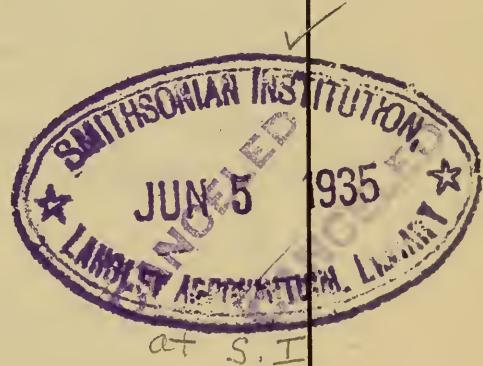
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AERONAUTICS

1931



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INTRODUCTION

This Bibliography of Aeronautics for 1931 covers the aeronautical literature published from January 1 to December 31, 1931. The first Bibliography of Aeronautics was published by the Smithsonian Institution as volume 55 of the Smithsonian Miscellaneous Collections and covered the material published prior to June 30, 1909. Supplementary volumes of the Bibliography of Aeronautics for the subsequent years have been published by the National Advisory Committee for Aeronautics. The last preceding volume was for the calendar year 1930.

As in the previous volumes, citations of the publications of all nations are included in the languages in which these publications originally appeared. The arrangement is in dictionary form with author and subject entry and one alphabetical arrangement. Detail in the matter of subject reference has been omitted on account of the cost of presentation, but an attempt has been made to give sufficient cross-reference for research in special lines.

JOSEPH S. AMES,

Chairman National Advisory Committee for Aeronautics.

NOVEMBER 23, 1934.

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ABBREVIATIONS

Aer. Eng. Suppl. The Aero- plane.	The Aeroplane— . . . Aeronautical Engineering Supplement to The Aeroplane, London.
Aer. Res. Comm., Rep. Mem.	Aeronautical Research Committee, Reports and Memoranda, London.
Aeron. Journ.	Aeronautical Journal, London.
Aeronautics, Techn. Rep. Aer. Res. Comm.	Aeronautics. Technical Report of the Aero- nautical Research Committee, London.
Amer. Mach.	American Machinist, New York.
Ann. Soc. Météor. France	Annuaire, Société Météorologique de France, Paris.
Atti Assoc. Ital. Aerotechn.	Atti dell'Associazione Italiana di Aerotechnica, Roma.
Aut. Mot. Flugw.	Automobil-Motorrad-Flugwesen, Berlin.
Automotive Ind.	Automotive Industries, New York.
Bull. Aero-Club Suisse	Bulletin, Aero Club Suisse, Berne.
Bull. Exper. Depart. Airplane Eng. Div.	The Bulletin of the Experimental Department, Airplane Engineering Division, U.S.A., Day- ton, Ohio.
Bull. Féd. Aér. Int.	Bulletin Fédération Aéronautique Interna- tionale, Paris.
Bull. Soc. Enc. Ind. Nat.	Bulletin de la Société d'Encouragement pour l'Industrie Nationale, Paris.
Deutsche Luftf. Zeitschr.	Deutsche Luftfahrer Zeitschrift, Berlin.
Ind. Eng. Chem.	Industrial and Engineering Chemistry, Wash- ington, D.C.
Jahrb. 1929, Deutsch. Versuch- sanstalt für Luftfahrt, E. V., Berlin-Adlershof.	Jahrbuch 1929 der Deutschen Versuchsanstalt für Luftfahrt, E.V., Berlin-Adlershof, Mün- chen.
Journ. Amer. Soc. Mech. Eng.	Journal of the American Society of Mechanical Engineers, New York.
Journ. Frankl. Inst.	Journal of the Franklin Institute, Philadelphia.
Journ. Inst. Amer. Electr. Eng.	Journal of the American Institute of Electrical Engineers, New York.
Journ. Mil. Serv. Inst.	Journal of the Military Service Institution, Governors Island, New York.
Journ. Roy. Aer. Soc.	Journal of the Royal Aeronautical Society, London.
Journ. Roy. Soc. Arts	Journal of the Royal Society of Arts, London.
Journ. Soc. Automotive En- gineers.	Journal of the Society of Automotive Eng- gineers, New York.
Journ. United States Art.	Journal of the United States Artillery, Fortress Monroe, Va.
Mech. Eng.	Mechanical Engineering, New York.
Nat. Aer. Mag.	National Aeronautic Magazine, Washington, D.C.
Nat. Geog. Mag.	National Geographic Magazine, Washington, D.C.
Pop. Mech.	Popular Mechanics, Chicago.
Pop. Sci. Monthly	Popular Science Monthly, New York.
Proc. Amer. Inst. Electr. Eng.	Proceedings of the American Society of Elec- trical Engineers, New York.
Proc. Nat. Acad. Sci.	Proceedings of the National Academy of Sciences, Washington, D.C.
Proc. Phys.-Math. Soc. Japan	Proceedings of the Physico-Mathematical So- ciety of Japan, Tokyo, Japan.

Proc. U.S. Nav. Inst-----	Proceedings of the United States Naval Institute, Annapolis, Md.
Quart. Journ. Roy. Met. Soc---	Quarterly Journal of the Royal Meteorological Society, London.
Rend. Istituto Sper. Aer-----	Rendiconto dell'Istituto Sperimentale Aeronautico, Roma.
Rend. Teen. Dir. Sup. Genio Costr. Aeron.	Commissariato dell'Aeronautica. Intendenza Generale. Rendiconti Tecnici della Direzione Superiore del Genio e delle Costruzioni Aeronautiche. Roma.
Rév. Gén. Scien-----	Révue Générale Scientifique, Paris.
Riv. Aer-----	Rivista Aeronautica, Roma.
Riv. Ital. Aeron-----	Rivista Italiana Aeronautica, Roma.
Sat. Even. Post-----	Saturday Evening Post, Philadelphia, Pa.
Scient. Amer-----	Scientific American, New York.
Techn. Berichte-----	Technische Berichte, Charlottenburg.
Zeitschr. Angew. Math. Mech--	Zeitschrift für Angewandte Mathematik und Mechanik, Berlin.
Zeitschr. Flugt. Motorluftsch--	Zeitschrift für Flugtechnik und Motorluftschiffahrt, München und Berlin.
Zeitschr. Österr. Ing. Arch. Ver-	Zeitschrift des Österreichischen Ingenieur- und Architekten-Vereines, Wien.
Zeitschr. Ver. deutscher Ing----	Zeitschrift des Vereines deutscher Ingenieure, Berlin.

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By PAUL BROCKETT

A

AACHEN. *Abhandlungen aus dem Aerodynamischen Institut an der Technischen Hochschule Aachen. Heft 9.*
Berlin, Verlag Springer, 1930, pp. 63, ills.

— *Abhandlungen aus dem Aerodynamischen Institut an der Technischen Hochschule Aachen. Heft 10.*
Berlin, Verlag Springer, 1931, pp. 68, ills.

ABBOTT, Ira H. *Airship model tests in the variable density wind tunnel.*
National Advisory Committee for Aeronautics, Report No. 394, Sept. 30, 1931, Washington, U.S. Government Printing Office, 1931, pp. 24, ills., diagrs., tabs.

— *Experiments with an airfoil model on which the boundary layer is controlled without the use of supplementary equipment.*
National Advisory Committee for Aeronautics, Technical Notes No. 371, April 14, 1931, Washington, April 1931, pp. 6, ill., diagrs.

ABIT, EDMOND. *L'interaction des longerons dans les ailes cantilever.*
L'Aeronautique, 13me année, No. 144, Bulletin L'Aérotechnique, 9e année, no. 101 (mai 1931), Paris, pp. 172-176, diagrs.

ABRAHAM, MARTIN. *Korrosionsversuche an Verspannungs-Drahtlitzen mit verschiedenartigen Endverbindungen.*
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 532-536, ills., tabs.

ABRAMS, MONTE C. *Air express possibilities in the United States.*
Aviation, Vol. 30, No. 12 (Dec. 1931), New York, pp. 686-688, ills.

ACCELERATION. *See* Coombes, L. P., and A. S. Crouch: *The accelerations of a Fairey "Flycatcher" seaplane during aerobatic manœuvres.*

— *See* Finn, E., and A. E. Woodward Nutt: *Accelerations on aircraft during manœuvres.*

— *See* Glauert, H.: *Some generalized curves for the accelerated motion of an aeroplane.*

ACCIDENTS. *Accidents in civil aviation.*
Aeroplane, Vol. 41, No. 19 (Nov. 4, 1931), London, pp. 1078-1082.
Flight, No. 1193, Vol. 23, No. 45 (Nov. 6, 1931), London, pp. 1112-1114.

— *Aeroplane accidents in U.S.A. An analysis of the causes of accidents in civil flying during the past three years.*
Aircraft Engineering, Vol. 3, No. 30 (Aug. 1931), London, p. 194, tabs.

— *Blessures causées par un avion roulant au sol.*
L'Aérophile, 39e année, No. 5 (15 mai 1931), Paris, p. 153.

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ACCIDENTS. *See* Drakensberg: The Drakensberg accident.

- *See* G-AAZK: Technical report by the accidents investigation sub-committee on the accident to the aeroplane G-AAZK at Meopham, Kent, on 21st July 1930.
- *See* Glendinning, W. G.: Possible cause of aircraft fires on crash.
- *See* Great Britain: Report of the R. 101 inquiry. Presented by the Secretary of State for Air to Parliament by command of His Majesty, March 1931.
- *See* Grey, Charles Grey: On errors of judgement.
- *See* H. H.: De eerste slachtoffers der luchtvaart.
- *See* Jones, Ernest: Half of air accidents avoidable?
- *See* Kühn, Fritz: Fire prevention on aircraft.
- *See* Meopham: The Meopham accident.
- *See* Meopham: On the Meopham accident.
- *See* Mount Batten: On the accident at Mount Batten.
- *See* Prochasson, Roger: Le risque de l'air.
- *See* R 101: The loss of the airship R 101.
- *See* R. 101: Report of the R. 101.
- *See* R 101: R 101 Simon inquiry report. Disaster due to loss of gas.
- *See* R 101: The Simon report on R 101.
- *See* S. 64: Relazione finale della commissione d' inchiesta sull' incidenti dell'apparecchio S. 64.
- *See* Steele, Dudley: Searching from the air.
- *See* United States Department of Commerce: Aircraft accidents.
- *See* Weick, Fred E.: The behavior of conventional airplanes in situations thought to lead to most crashes.

ACKERET, J. Kavitation (Hohlraumbildung).

Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 1. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. 461-486, illus.

- *See* Larner, L., and J. Ackeret: Aeronautical education and research at the Swiss Institute of Technology in Zurich.

ACLAND, W. R. D. Deck flying.

Flight, No. 1153, 1154, Vol. 23, No. 5, 6 (Jan. 30, Feb. 6, 1931), London, pp. 102-103, 121-125, illus.

Journ. Roy. Aer. Soc., Vol. 35, No. 245 (May 1931), London, pp. 372-400, illus.

ADAMS, HAROLD LAMONT. *See* Kirsten, Frederick Kurt, Harold Lamont Adams and Richard Lewis Stith: Venturi wind tunnel number 1.

ADIE, A. M. The commercial importance of fog control.

Annals of the Association of American Geographers, Vol. 21, 1931, pp. 91-100.

ADJUDANT-VINCENOT. *See* Joux, Étienne Joseph François: Un dirigeable militaire: "L'Adjudant-Vincenot" (1911-1916).

AÉRO-CLUB DE FRANCE. *See* Ducout, Marcel-S.: *Le rallye-parachutes de l'Aéro-club.*

AERODROMES. *See* Airports.

AERODYNAMICS. Aerodynamics.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 16-27.

- *See* Abbott, Ira H.: Airship model tests in the variable density wind tunnel.
- *See* Anderson, Raymond, F.: The aerodynamic characteristics of three tapered airfoils tested in the variable density wind tunnel.
- *See* Bamber, Millard J.: Wind tunnel tests on airfoil boundary layer control using a backward-opening slot.
- *See* Bilbault, G.: Adaptation directe du groupe motopropulseur par la méthode graphique à échelles logarithmiques.
- *See* Born, F.: Die Stellungslichter der Wasser- und Luftfahrzeuge.
- *See* Breguet, Louis: Aérotechnique.—Suspension aérodynamique du véhicule aérien.
- *See* Bryant, L. W., and D. H. Williams: The application of the method of operators to the calculation of the disturbed motion of an aeroplane.
- *See* Crocco, Gaetano Arturo: Elementi di aviazione.
- *See* Curry, Manfield: Sails and aerodynamics.
- *See* Defoe, George L.: A comparison of the characteristics of three normal and three reflexed airfoils in the variable density wind tunnel.
- *See* Desgrandschamps, R. G.: Calcul et construction des avions légers . . .
- *See* Ebert, Heinrich: Die DVL-Messnaben und ihre Verwendung beim Flugversuch.
- *See* Eck, Bruno: Strömungslehre an hand von strömungsbildern; darstellung der wichtigsten strömungsvorgänge aus der flugtechnik und dem maschinenbau mit 60 strömungsaufnahmen.
- *See* Falkner, V. M., and Sylvia W. Skan: Some approximate solutions of the boundary layer equations.
- *See* Green, J. J.: The viscous layer associated with a circular cylinder.
- *See* H.: Havens voor luchtschepen.
- *See* Helmbold, H. B.: Über Messflüge zur Bestimmung von Stirnwiderstandsfläche und Vortriebswirkungsgrad.
- *See* Hydrodynamics: Hydrodynamics and aerodynamics.
- *See* Johansen, F. C.: Flow through pipe orifices at low Reynolds numbers.
- *See* Joukowski, N.: Aérodynamique.
- *See* Kirsten, Frederick Kurt, Harold Lamont Adams and Richard Lewis Stith: Venturi wind tunnel number 1.
- *See* Knight, Montgomery, and Richard W. Noyes: Span-load distribution as a factor in stability in roll.

AERODYNAMICS. *See* Koyemann, Alfred: Flugmechanische Beziehungen zwischen Fluggeschwindigkeit, Flugkosten und Flugweite und ihre Abhangigkeit von der widerstandsflache des Flugzeuges.

- *See* Krell, O.: Druckverteilung an der luftumstromten Kugel.
- *See* Kruse, Helmuth: Untersuchung des Kurvenfluges.
- *See* Lafay, A.: Aerodynamique.—Sur les deviations, de la poussee du vent sur un cylindre, produites par de tres petits ressauts superficiels.
- *See* Lapresle, A.: The aerodynamic wind vane and the inherent stability of airplanes.
- *See* Lapresle, A.: Le laboratoire d'aerodynamique.
- *See* Lock, C. N. H.: The equation of motion of a viscous fluid in tensor notation.
- *See* Lotz, Irmgard: Berechnung der Auftriebsverteilung beliebig geformter Flugel.
- *See* McCaffery, Richard Stanislaus, and Daniel Edward Krause: Air discharge of circular tuyeres.
- *See* Magnan, A., et A. Sainte-Lague: Aerodynamique.—Sur la distribution des vitesses aerodynamiques autour d'un avion in vol.
- *See* Meunier, Emile Marie: Une nouvelle voie  l'avenir de l'aviation . . . ouvrage posthume de Emile-Marie Meunier.
- *See* Monish, Byron Harold: Effect of variation of chord and span of ailerons on hinge moments at several angles of pitch.
- *See* Munk, Max Michael: The center of pressure. Article eight on the principles of aerodynamics.
- *See* Munk, Max Michael: The "M" wing sections. Article ten of the principles of aerodynamics.
- *See* Munk, Max Michael: Mathematical wing sections. Dr. Max M. Munk's ninth article on the principles of aerodynamics.
- *See* National Physical Laboratory: National Physical Laboratory. Aerodynamics Department. Wind tunnel design. Fluid motion.
- *See* New York University: Technical notes of the Daniel Guggenheim School of Aeronautics, College of Engineering, New York University, No. 1.
- *See* Olshevsky, Dmitry: A machine for automatic generation of airfoils.
- *See* Ower, E., and C. T. Hutton: Investigation of the boundary layers and the drags of two streamline bodies.
- *See* Peters, H.: Einfluss der Zahigkeit bei Geschwindigkeitsmessungen mit Staudruckmultiplikatoren. (Bruhnsche Venturi-Doppelduse.)
- *See* Petersohn, E.: Abwindmessungen hinter Tragflugeln mit abgerissener Stromung.
- *See* Piercy, N. A. V.: Aerodynamics for engineers. IV.—Elliptic loading—channel corrections—downwash—viscous motion and boundary-layer theory. V.—Aeroplane performance in normal flight—other steady motions—ele-

ments of airscrew theory. VI.—An introduction to the study of aeroplane stability with a section on control.

AERODYNAMICS. *See* Pistolesi, E.: Correnti e azioni dinamiche a velocità molto elevate.

- *See* Poggi, L.: Azioni aerodinamiche parallele al movimento su di un' ala piana animata da moto traslatorio uniforme a da moto oscillatorio.
- *See* Poggi, L.: Sulla variazione de apportarsi ai risultati delle esperienze eseguite al tunnel aerodinamico su di un modello alare.
- *See* Relf, E. F.: Aerodynamic research in 1930.
- *See* Rhode, Richard V., and Eugene E. Lundquist: Pressure distribution over the fuselage of a PW-9 pursuit airplane in flight.
- *See* Rhode, Richard V.: The pressure distribution over the wings and tail surfaces of a PW-9 pursuit airplane in flight.
- *See* Sails: The aerodynamics of sails.
- *See* Schilhansl, Max: Modellversuche zur Ermittlung des Leistungsbedarfs für die künstliche Belüftung von Motorenprüfständen.
- *See* Schilhansl, Max: Versuche an einem Windkanalmodell.
- *See* Schmeidler, Werner: Untersuchungen über Flugzeuge mit veränderlichen Flächen.
- *See* Schmidt, Wilhelm: Beitrag zur Entwicklung eines autorotationsfreien steil landbaren Flugzeuges.
- *See* Schrenk, Martin: Über das Zusammenwirken von Flugwerk und Triebwerk.
- *See* Schütt, Karl: Einführung in die Physik des Fliegens.
- *See* Scott, Merit: The effect of the presence of a grid upon certain characteristics of the airflow at the surface of an airfoil.
- *See* Scott, Merit: The variation of the thermal boundary layer of a miniature airfoil.
- *See* Seewald, Friedrich: Einige Probleme aus dem Arbeitsgebiet der Aerodynamischen Abteilung der DVL.
- *See* Seewald, Friedrich: Flugversuche mit Messnaben zur Bestimmung der aerodynamischen Eigenschaften der Luftfahrzeuge.
- *See* Serragli, G.: Il moto di un molinello a pale orientabili posto in una corrente variabile.
- *See* Soulé, Hartley Akin, and Nathan Frost Scudder: A method of flight measurement of spins.
- *See* Southwell, R. V., and Letitia Chitty: On the problem of hydrodynamic stability.—I. Uniform shearing motion in a viscous fluid.
- *See* Taylor, G. I.: The flow of air at high speeds past curved surfaces.
- *See* Teed, T. L.: Airships in horizontal flight. An examination of the complicated forces that come into play when an airship is pitched.

AERODYNAMICS. *See* Theodorsen, Theodore: The theoretical pressure distribution on wing sections.

- *See* Tinaglia, Guglielmo: Aerodinamica.
- *See* Tinson, Clifford W.: Correction of aeroplane performance to standard atmosphere (Density basis).
- *See* Trayer, George W., and H. W. March: Elastic instability of members having sections common in aircraft construction.
- *See* Trojani, F.: Aviazione; lezioni tenute agli allievi piloti di aeroplano 1931.
- *See* United States Department of Commerce, Aeronautics Branch: Relative lift distribution in any biplane. July 1, 1929.
- *See* Wenzinger, Carl Joseph: Pressure distribution over a thick, tapered and twisted monoplane wing model—N.A.C.A. 81-J.
- *See* Whitlock, T. G.: Elementary applied aerodynamics.
- *See* Younger, John Elliott, and Baldwin M. Woods: Dynamics of airplanes and airplane structures.

AERODYNAMISCHEN INSTITUT AN DER TECHNISCHEN HOCHSCHULE AACHEN.

See Aachen: Abhandlungen aus dem Aerodynamischen Institut an der Technischen Hochschule Aachen.

AEROLOGY. *See* Maguire, Charles Joseph: Aerology; a ground school manual in aeronautical meteorology.

AERONAUTICAL CHAMBER OF COMMERCE. Aircraft Yearbook 1931.

New York, D. Van Nostrand Co., 1931, pp. 607, Ills.

- *See* Berchtold, William E.: All for one—one for all. The accomplishments of the Aeronautical Chamber of Commerce.

AERONAUTICAL RESEARCH COMMITTEE. Aeronautical research. Report for 1930-31 published.

Flight, No. 1189, 1190, Vol. 23, No. 41, 42 (Oct. 9, 16, 1931), London, pp. 1010-1012, 1049-1050.

- Aeronautics. Technical Report of the Aeronautical Research Committee for the year 1929-30, vol. I, Aerodynamics vol. II, Stability and control, spinning, materials, engines, etc.

London, His Majesty's Stationery Office, 1931, pp. x, 727, xi-xxiv, x, 729-1397, xi-xix, illus., diagrs., tabs.

- Collected reports on British high speed aircraft for the 1927 Schneider Trophy contest.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 372, illus., diagrs., tabs.

- Reports and memoranda published between 1st September, 1929 and 31st December, 1930.

Aer. Res. Comm., Rep. Mem., No. 1350, January 1931, London, 1931, pp. 8.

- *See* Glazebrook, Richard: Aeronautical research in England. A summary of ten years' work directed by the Aeronautical Research Committee.

AEROPOSTALE. The affaire aeropostale.

Aeroplane, Vol. 40, No. 10 (March 11, 1931) London, pp. 416, 418.

- On the world's longest airway. Parts I, II, and III.

Aeroplane, Vol. 40, Nos. 7, 8, 9 (Feb. 18, 25, and March 4, 1931), London, pp. 321, 356, 358, 360, 362, illus.

AEROS. I fågel perspektiv.

Flygning, Årg. 9, N:R 1 (Jan. 1931), Stockholm, p. 2.

AFRICA. Air communications in Africa.

Aeroplane, Vol. 40, No. 5 (Feb. 4, 1931), London, pp. 204, 206.

— Air transport development in Africa.

Flight, No. 1153, Vol. 23, No. 5 (Jan. 30, 1931), London, pp. 100-101, map.

— L'aviation marchande à travers l'Afrique.

L'Aéronautique, 13me année, No. 142 (Mars. 1931), Paris, p. 84, ill.

— The Cairo-to-Cape air mail route: The first link inaugurated.

Illustrated London News, Vol. 88, No. 2289 (March 7, 1931), London, p. 379, ill.

— Down the all-red route.

Aeroplane, Vol. 40, No. 1 (Jan. 1931), London, pp. 28, 30, ills.

— Pioneering in East Africa.

Aeroplane, Vol. 40, No. 7 (Feb. 18, 1931), London, pp. 290, 292.

— The R.A.F. west African flight.

Flight, No. 1196, Vol. 23, No. 48 (Nov. 27, 1931), London, pp. 1167-1170, ills.

— Round Africa by light plane.

Flight, No. 1155, Vol. 23, No. 7 (Feb. 13, 1931), London, p. 137, ill., map.

— The troubles of the African mail service.

Aeroplane, Vol. 40, No. 14 (April 8, 1931), London, p. 627, ill.

— See Cobham, Alan: Twenty-thousand miles in a flying boat; my flight round Africa.

— See Humphrey, G. E. Woods: Air communications in Africa.

— See Marie, Eugène Armand: Le Congo à six jours de Paris.

— See Samson, Charles Rumney: A flight from Cairo to Cape Town and back.

AHRENBERG, ALBIN. Bolivar, luftens vagabond.

Stockholm, H. Schilt, 1931, pp. 160, ills.

— En solskensflygning Grönland-Island 1931.

Flygning, Årg. 9, N:R 12 (Dec. 1931), Stockholm, pp. 239-241, ills.

AILERONS. See Clark, K. W.: The motions, at a stall, of a Bristol fighter aeroplane with slot and aileron control on both planes.

— See Control: Control by conventional ailerons. Results of a series of wind-tunnel experiments carried out by the U.S. Bureau of Standards.

— See Hartshorn, A. S.: The application of the Servo principle to aileron operation.

— See Hartshorn, A. S.: Theoretical relationship for a wing with unbalanced ailerons.

— See Monish, Byron Harold: Effect of variation of chord and span of ailerons on hinge moments at several angles of pitch.

— See United States Department of Commerce. Aeronautics Branch: Control of airplanes at low speeds by means of conventional ailerons. July 1, 1931.

AIMONE-CAT, MARIO. L'aviazione come strumento di offesa.

Atti della Società Italiana per il Progresso delle Science. Diciottesima riunione, Firenze, 18-25 settembre 1929, Roma, Vol. 1, pp. 465-477.

AIR. See Neumark, Stefan: Badanie wolnego spadku z uwzglednieniem oporu powietrza o zmiennej gęstości.

AIR-COOLED. See Nutt, A. E. Woodward, A. F. Scroggs, and E. Finn: Range of aircraft with air-cooled radial engine using altitude control.

AIR CORPS. The Air Corps' mass migration.

Aviation, Vol. 30, No. 7 (July 1931), New York, pp. 398-403, illus.

— Plans for the Air Corps maneuvers.

Aviation, Vol. 30, No. 6 (June 1931), New York, pp. 339-341, illus.

— See United States Department of War: Report of Air Corps procurement operations, fiscal year 1931. (Sec. 10 (m), 44 Stat. L. 787).

AIRCRAFT manufacture. See Martin, Glenn L.: The development of aircraft manufacture.

AIRCRAFT YEARBOOK. See Aeronautical Chamber of Commerce: Aircraft Yearbook 1931.

AIR currents. See Lange, K. O.: Measurement of vertical air currents in the atmosphere.

AIR estimates. See Great Britain: On the air estimates.

— Great Britain: On the air estimates again.

— See McAlery, C. M.: The debate on the air estimates.

AIR flow. Seeing the spray.

Aeroplane, Vol. 41, No. 25 (Dec. 16, 1931), London, pp. 1380-1384, illus.

— See Hooker, S. G.: Compressibility effects in high-speed air flow.

— See Richardson, E. G.: Flow of air adjacent to the surface of a rotating cylinder in a stream.

— See Tanaka, Keikiti: Air flow through exhaust valve of conical seat.

— See Townend, H. C. H.: On rendering airflow visible by means of hot wires.

— See Townend, H. C. H.: A study of slots, rings and jet control of the boundary layer.

AIRFOILS. Il "Venturi" dà origine ad una nuova teoria dell'ala.

Riv. Aer., Anno 7, N. 7 (luglio 1931), Roma, pp. 129-131, illus.

— See Abbott, Ira H.: Experiments with an airfoil model on which the boundary layer is controlled without the use of supplementary equipment.

— See Anderson, Raymond F.: The aerodynamic characteristics of six commonly used airfoils over a large range of positive and negative angles of attack.

— See Anderson, Raymond F.: The aerodynamic characteristics of three tapered airfoils tested in the variable density wind tunnel.

— See Bamber, Millard John: Wind tunnel tests on airfoil boundary layer control using a backward-opening slot.

AIRFOILS. *See* Bonder, Julian: *Sur la construction des profils d'aviation.*

- *See* Bradfield, F. B.: *The effect on lift and drag of corrugating the surface of an aerofoil.*
- *See* Briggs, Lyman James, and H. L. Dryden: *Aerodynamic characteristics of circular-arc airfoils at high speeds.*
- *See* Clark K. W., and B. Lockspeiser: *Wind tunnel tests on aerofoils at negative incidences.*
- *See* Defoe, George L.: *A comparison of the aerodynamic characteristics of three normal and three reflexed airfoils in the variable density wind tunnel.*
- *See* Fage, A., and V. M. Falkner: *An experimental determination of the intensity of friction on the surface of an aerofoil.*
- *See* Fage, A., V. M. Falkner, and W. S. Walker: *Experiments on a series of symmetrical Joukowsky sections.*
- *See* Girault, Maurice: *Méthode géométrique de tracés de profils d'ailes et de corps fuselés. Essai sur la viscosité en mécanique des fluides.*
- *See* Glauert, H.: *The force and moment on an oscillating aerofoil.*
- *See* Green, J. J.: *Breakaway of boundary layer on a cylinder and an airfoil.*
- *See* Haus, Fr.: *Portances élevées et profils hypersustentateurs.*
- *See* Jacobs, Eastman Nixon: *The aerodynamic characteristics of eight very thick airfoils from tests in the variable density wind tunnel.*
- *See* Jacobs, Eastman Nixon, and Robert M. Pinkerton: *Tests of N.A.C.A. airfoils in the variable-density wind tunnel. Series 43 and 63.*
- *See* Jacobs, Eastman Nixon: *Tests of six symmetrical airfoils in the variable density wind tunnel.*
- *See* Munk, Max Michael: *The measured lift of airfoils.*
- *See* Neumark, Stefan: *Sur les formes diverses du potential servant à calculer les forces qui agissent sur les profils d'aviation.*
- *See* Olshevsky, Dmitry: *A machine for automatic generation of airfoils.*
- *See* Perring, W. G. A.: *Wind tunnel tests on a symmetrical aerofoil (Göttingen 429 section).*
- *See* Pinkerton, Robert M.: *Effect of nose shape on the characteristics of symmetrical airfoils.*
- *See* Raffaelli Italo: *Profili alari seghettati.*
- *See* Roy, Maurice: *Contribution à la théorie des ailes sustentatrices; caractéristiques des ailes monoplanes; moments de tangage et foyers.*
- *See* Scott, Merit: *The effect of the presence of a grid upon certain characteristics of the airflow at the surface of an airfoil.*
- *See* Scott, Merit: *The variation of the thermal boundary layer of a miniature airfoil.*
- *See* Stanton, T. E.: *On the distribution of pressure over a symmetrical Joukowsky section at high speeds.*

AIRFOILS. *See* Stanton, T. E.: Tests under conditions of infinite aspect ratio of 4 aerofoils in a high speed wind channel.

— *See* Tanner, T.: Movement of smoke in the boundary layer of an aerofoil without and with slot.

— *See* Tanner, T.: The two-dimensional flow of air around an aerofoil of symmetrical section.

— *See* Ward, Kenneth E.: The effect of small variations in profile of airfoils.

— *See* Ward, Kenneth E.: The interference effects on an airfoil of flat plate at mid-span position.

— *See* Wenzinger, Carl Joseph, and Joseph A. Shortal: The aerodynamic characteristics of a slotted Clark Y wing as affected by the auxiliary airfoil position.

— *See* Williams, D. H., and A. S. Batson: Pressure distribution over a yawed aerofoil, by D. H. Williams, with an appendix on rolling moments on a yawed aerofoil, by A. S. Batson.

— *See* Wings.

AIR LINES. New rules for air lines.

Western Flying, Vol. 10, No. 5 (Nov. 1931), Los Angeles, Cal., p. 36.

AIR MAIL SERVICE. *See* Mail.

AIRPLANE CARRIERS. *See* Acland, W. R. D.: Deck flying.

AIRPORTS. Airport construction in 1930.

Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 31-33, ills., tabls.

— Airport operations and improvements.

Aviation, Vol. 30, No. 3 (March 1931), New York, pp. 158-160, diagr., tabls., maps.

— Getting to and from.

Airport Section, Western Flying, Vol. 9, No. 3 (March 1931), Los Angeles, Cal., pp. 85-86, ill.

— Municipal aerodromes in England. Information regarding existing facilities and possibilities of suitable sites for factories.

Aircraft Engineering, Vol. 3, No. 28 (June 1931), London, p. 145, ill., map.

— Municipally-owned aerodromes.

Flight, No. 1151, Vol. 23, No. 3 (Jan. 16, 1931), London, pp. 57-58, ill.

— That fire hazard.

Airway Age, Vol. 13, No. 10 (Sept. 5, 1931), New York, pp. 211-214.

— Zoning for airports.

Airport Section, Western Flying, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Cal., pp. 83-84.

— *See* Arthur, William E.: Airport development.

— *See* Barnitz, Richard B.: The effect of airplane design on airports.

— *See* Barnitz, Richard B.: Gleaned from the Conference.

— *See* Barnitz, Richard B.: How the law can help airports.

— *See* Barnitz, Richard B.: Safety at airports.

— *See* Bigelow, A. A.: Airport growth in 1930-31.

AIRPORTS. *See* Blee, Harry H.: Proteccion de hangares de aeroplanos. Resumen del informe del comite de investigaciones sobre el control de hangares para aeroplanos por aplicacion automatica del agua.

- *See* Bouman, L. F.: De financieele zijde van het luchthavenbedrijf.
- *See* Buffalo: Developing the Buffalo municipal airport.
- *See* Canada: Notes on aerodrome development for airports, private and intermediate, seaplane ports and seaplane anchorages in Canada.
- *See* Chicago: The brain of the airport.
- *See* Cooper, Mabel C.: Airports of Mexico.
- *See* East Hartford: Rentschler field at East Hartford.
- *See* Ferris, E. M.: Creating a municipal port.
- *See* Francis, Roy N.: Economic airport operation.
- *See* Gray, B. E.: Surfacing the small airport.
- *See* Green, W. Sanger: A profitable airport.
- *See* H.: Havens voor luchtschepen.
- *See* Hawks, Frank: What kind of surface a pilot wants.
- *See* Haynes, H. Gene: Indianapolis municipal airport.
- *See* Johnson, Charles P.: Pittsburgh city-county airport.
- *See* Kjellson, Henry: Belysning av flyglinjer och flyghamnar.
- *See* Lake, Harley W.: Merchandising airport service.
- *See* Landing fields.
- *See* Lindbergh, H. A.: Minneapolis municipal airport.
- *See* Lippman, H. E.: Design of municipal airports.
- *See* Logan, Hub: Hospitality—Pueblo style.
- *See* Long, M. A.: Airports for seaboard cities.
- *See* Macdonald, Austin F.: Airport problems of American cities.
- *See* Mackall, K. W.: U.S. aerodrome lighting. Details and characteristics of the various types of aerodrome lights in current use.
- *See* Mockler, Don: What price airports?
- *See* New York: Municipal airport at New York.
- *See* New York: New York City dedicates its airport.
- *See* New York: Report of the fact-finding committee on suitable airport facilities for the New York metropolitan district.
- *See* Niles, Alfred S.: West coast progress in 1930.
- *See* Pryor, Edwin W.: Wichita's municipal airport.
- *See* Rabbitt, P. J.: The second year at the airport for the Nation's Capital.

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AIRPORTS. *See* Randolph, Ellen: "West Point of the air."

— *See* Ritchie, H. C.: New airport lighting development.

— *See* Roosevelt field: Roosevelt field.

— *See* St. John, R. U.: A downtown airport.

— *See* Sexton, Russell W.: Lambert-St. Louis airport.

— *See* Sexton, Russell W.: Lambert-St. Louis municipal airport of 1931.

— *See* Shaw, B. Russell: Foresight in airport design.

— *See* Standard Oil Company of California: Landing fields of the Pacific west.

— *See* Tulsa: Airport operators go into conference at Tulsa.

— *See* United States Congress. House Committee on Military Affairs: Increase flying-field area of Governors Island, N.Y. . . . Report to accompany H.R. 137.

— *See* United States Congress. House. Committee on Military Affairs: Lease portions of Air Depot, Little Rock, Ark. . . . Report to accompany H.R. 15493.

— *See* United States Congress. Joint Commission on Airports: Airports, National Capital.

— *See* United States Congress. Joint Commission on Airports: Recommending acquisition of airports . . . Report.

— *See* United States Congress. Senate. Committee on the District of Columbia: Commercial airport for District of Columbia . . . Report to accompany S. 3901.

— *See* United States Congress. Senate. Committee on Naval Affairs: Authorizing the Secretary of the Navy to accept a lighter-than-air base, and to construct necessary improvements thereon . . . Report to accompany H.R. 6810.

— *See* United States Department of Commerce. Aeronautics Branch: Airport design and construction. July 1, 1931.

— *See* United States Department of Commerce. Aeronautics Branch: Airport rating regulations. Effective as amended January 1, 1929.

— *See* United States Department of Commerce. Aeronautics Branch: Airport rating regulations. Effective as amended September 1, 1930.

— *See* United States Department of Commerce, Aeronautics Branch: Airports and landing fields. Revised January 1, 1931.

— *See* United States Department of Commerce. Aeronautics Branch: Descriptions of airports and landing fields in the United States. September 1, 1931.

— *See* United States Department of Commerce, Aeronautics Branch: List of airports and landing fields. Revised October 15, 1931.

— *See* United States Department of Commerce. Aeronautics Branch: Notes on airport lighting. April 15, 1929.

AIRPORTS. *See* United States Department of Commerce, Aeronautics Branch: Report of committee on airport zoning and eminent domain [December 18, 1930].

- *See* Vancouver: Vancouver's airport.
- *See* Wagner, Sterling Robacher: The modern airport. A study in landscape engineering of the location, design, construction and management of airports, together with a suggested design for the municipal airport at Syracuse, N.Y.
- *See* Walsh, H. Vandervoort: Architectural principles applied to airport design.
- *See* Wenneman, Joseph H.: Municipal airports: history, development and legal aspect of municipal airports, text of federal acts and regulations, digests of state aviation laws and of the state enabling acts, ordinances of principal cities having airports on main airways, legal and business forms in use in the aviation industry.
- *See* York, Jack C.: Birmingham, Alabama has new port.
- *See* Ziembinsky, M. S.: Principes d'établissement, d'aménagement agricole et hydraulique et d'entretien des terrains d'atterrissement.

AIR propelled cars. *See* Rozendaal, John: *Luchtschroefwagen tegen vliegtuig*.

AIR routes. *See* British Arctic Air Route Expedition: The British Arctic Air Route Expedition.

AIR sacs. *See* Gunn, Donald L.: The function of the air sacs of insects.

AIRSCREWS. *See* National Physical Laboratory: The National Physical Laboratory. Racing seaplanes and new aircraft. Airscrews. Thrust integrating tubes.

AIR SERVICE training limited. Preliminary prospectus of air service training limited.

pp. 23, 24-30 loose leaves.

AIRSHIPS. Air as force to drive dirigible.

United States Daily, Friday, June 19, 1931, Washington, D.C., p. 2, ill.

- The airship service.
Engineering, Vol. 131, No. 3410 (May 22, 1932), London, pp. 675-676.
- The all-metal airship.
Flight, No. 1156, Vol. 23, No. 8 (Feb. 20, 1931), London, p. 157.
- An international airship scheme.
Aeroplane, Vol. 41, No. 25 (Dec. 16, 1931), London, p. 1356.
- The largest dirigible.
Aviation, Vol. 30, No. 10 (Oct. 1931), New York, pp. 599-600, ill.
- The last of our airships.
Aeroplane, Vol. 41, No. 20 (Nov. 1931), London, p. 1106.
- On the development of airships.
Aeroplane, Vol. 40, No. 20 (May 20, 1931), London, pp. 913-914, 916, 918, 920, ill.
- Our last airship. R. 100.
Aeroplane, Vol. 41, No. 21 (Nov. 18, 1931), London, p. 1168.

AIRSHIPS. *See* Abbott, Ira H.: Airship model tests in the variable density wind tunnel.

— *See* Ajalbert, Jean: *Le R-101 sur Beauvais, route des Indes; préface de Lucien Lainé.*

— *See* Akron: *El dirigible "Akron" de la marina Norte Americana.*

— *See* Akron: *The latest rigid airship. The Goodyear-Zeppelin Akron built for the U.S. Navy fully described and illustrated.*

— *See* Akron: *The Navy Airship "Akron."*

— *See* Akron: *Navy's super-airship nears completion.*

— *See* Akron: *The United States rigid airship "Akron."*

— *See* Allen, Hugh: *The story of the airship.*

— *See* Bird, W. G.: *The influence of atmospheric humidity and other factors upon the static lift of airships.*

— *See* Breithaupt, a. D.: *Methods of maintaining the equilibrium of airships.*

— *See* Breithaupt, J.: *Vorteile des Luftschiffs als Verkehrsmittel auf Groes- stentfernungen.*

— *See* Burgess, C. P.: *Water-recovery apparatus for airships.*

— *See* Chitty, Letitia, and R. V. Southwell: *A contribution to the analysis of primary stresses in the hull of a rigid airship.*

— *See* Dornier, Claude: *Vorträge und abhandlungen aus dem gebiete des flugzeugbaues und luftschiffbaues 1914-1930.*

— *See* Fritche, Carl: *The metalclad airship.*

— *See* Fulton, Garland: *Airship development.*

— *See* Harriman, H. H.: *U.S.S. Akron, world's largest airship; complete pictures and the story of the dock, ship, airport, and "Lighter-than-air-center" of the world.*

— *See* Hegener, Henri: *De Akron. Het grootste luchtschip der wereld.*

— *See* Jones, Bradley: *The airship "Akron."*

— *See* Jones, R., and A. H. Bell: *Biplane fins on a model of R. 101.*

— *See* K., A.: *A sportsman's airship.*

— *See* Klemperer, W.: *Luftschiff-Messtechnik.*

— *See* McAleery, C. M.: *The debate on airship policy.*

— *See* Pitman, Ernest: *A docking device for airships.*

— *See* Rosendahl, Charles Emery: *Up ship?*

— *See* Rosenkranz, Jans: *Ferdinand graf von Zeppelin; die geschichte eines abenteuerlichen lebens.*

— *See* Settle, T. G. W.: *Some recent aspects of rigid airships.*

— *See* Seydel, Edgar: *Elasitizitätstheorie des starren Luftschiffs.*

AIRSHIPS. *See* Silvestri, Armando: *L'ultimo dirigibile italiano.*

- *See* Simmons, L. F. G.: *Experiments relating to the flow in the boundary layer of an airship model.*
- *See* Spanner, Edward Frank: *The tragedy of "R 101."*
- *See* Sprigg, Christopher: *The airship, its design, history, operation and future.*
- *See* Teed, P. L.: *Gas fuel for airships. The manufacture of Blau Gas, with details of some possible alternatives.*
- *See* Teed, T. L.: *Airships in horizontal flight. An examination of the complicated forces that come into play when an airship is pitched.*
- *See* Thompson, Floyd La Verne, and H. W. Kirschbaum: *The drag characteristics of several airships determined by deceleration tests.*
- *See* United States: *The American naval airships.*
- *See* Van Orman, Ward T.: *A preliminary meteorological survey for airship bases on the middle Atlantic seaboard.*
- *See* Watson, Wilbur Jay: *Building the world's largest airship factory and dock; a complete description of this giant structure of the Goodyear-Zep-pelin Corporation at Akron, Ohio.*
- *See* Williams, Blair: *U.S.S. Akron.*
- *See* Z.R.S. 4.: *Essais des groupes moteurs du Z.R.S. 4 à Akron.*
- *See* Ziolkowsky, Konstantin Eduardowitsch: *Entwurf eines Ganz-Metall-Luftschiffes fur 40 Fluggäste.*

AIR transport. *See* Langley, M.: *Air transport. Towards Australia. The Dutch make a good start.*

AIRWAYS. *The federal airways project.*

Western Flying Vol. 9, No. 1 (Jan. 1931), Los Angeles, Calif., p. 74.

- *See* Germany Berlin-Hannover-Westgrenze, *Luftfahrtfeuer.*
- *See* Germany: *Hilfslandeplätze auf Nachtflugstrecken.*
- *See* Kear, Frank Gregg., and Gerald Hiles Wintermute: *A simultaneous radio-telephone and visual range beacon for the airways.*
- *See* Lighting: *Ground lighting equipment. The fundamental considerations and detailed design of lights for airway and aerodrome use.*
- *See* Martin, Harald: *Världens längsta luftfartslinje.*
- *See* Nixon, Laurence A.: *Airline rates and routes. Vols. 1-2; Oct. 1919-July 1930.*
- *See* United States Department of Commerce. Aeronautics Branch: *Airway strip map list . . .*
- *See* United States Department of Commerce. Aeronautics Branch: *General airway information. September 1, 1931.*
- *See* United States Department of Commerce. Aeronautics Branch: *List of air navigation charts. October 15, 1929.*

AIRWHEELS. *See* Peck, William Cecil, and Albert P. Beard; Static, drop, and flight tests on Musselman type airwheels.

AIRWORTHINESS. Amended airworthiness requirements. Effective January 1. *Aero Digest*, Vol. 18, No. 2 (Feb. 1931), New York, pp. 76, 78, 80.

— *See* Budwig, Gilbert: Airworthiness requirements for certificate for export.

AJALBERT, JEAN. *Le R-101 sur Beauvais, route des Indes; préface de Lucien Lainé.*

Paris, Les Éditions des Portiques, 1931, pp. 77, ills., maps.

AJMONE-CAT, MARIO. *Insegnamenti od impressioni di un'aerocrociera?*

Riv. Aer., Anno 7, N. 4 (aprile 1931), Roma, pp. 1-8.

AKRON. A cook stove for the Akron.

Western Flying, Vol. 10, No. 5 (Nov. 1931), Los Angeles, Calif., p. 33.

— El dirigible "Akron" de la marina Norte Americana.

Iberica, Ano 18, Num. 901 (7 nov. 1931), Barcelona, pp. 273, 276-278, ill.

— A glimpse at the Akron.

Western Flying, Vol. 10, No. 3 (Sept. 1931), Los Angeles, Calif., p. 17.

— The latest rigid airship. The Goodyear-Zeppelin Akron built for the U.S. Navy fully described and illustrated.

Aircraft Engineering, Vol. 3, No. 33 (Nov. 1931), London, pp. 271-273, ills.

— Launch of the U.S. Airship "Akron".

Flight, No. 1181, Vol. 23, No. 33 (Aug. 14, 1931), London, p. 822.

— The Navy airship "Akron."

Aero Digest, Vol. 19, No. 3 (Sept. 1931), New York, pp. 52-55, ills.

— Navy Zeppelin transmission system tested.

Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, p. 60, ill.

— Navy's super-airship nears completion.

Scient. Amer., Vol. 144, No. 5 (May 1931), New York, pp. 296-300, ills.

— Shock absorbers in the Akron.

Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, Calif., p. 21.

— The "U.S.S. Akron" is christened by Mrs. Hoover.

U.S. Air Services, Vol. 16, No. 9 (Sept. 1931), Washington, pp. 25-28, ills.

— The United States rigid airship "Akron".

Engineering, Vol. 132, No. 3423 (Aug. 21, 1931), London, pp. 215-218, 230, ills.

— *See* Airships: The largest dirigible.

— *See* Harriman, H.H.: U.S.S. *Akron*, world's largest airship; complete pictures and the story of the dock, ship, airport, and "Lighter-than-air-center" of the world.

— *See* Hegener, Henri: *De Akron. Het grootste luchtschip der wereld.*

— *See* K. A.: Trial flights of the "Akron."

— *See* Klein, Israel: How the Navy's giant airship will go to battle in time of war.

— *See* United States Navy: The U.S. Navy airship "Akron."

— *See* Williams, Blair: U.S.S. *Akron*.

ALASKA. *See* Hayes, Robert: *Alaska-Washington*.

ALAYRAC, ANTOINE CHARLES. *Étude des écoulements irrotationnels dans l'espace à trois dimensions.*

Paris, E. Blondel La Rougery, 1931, pp. 47, diagrs.

ALBATROS. *Das Langstrecken-Verkersflugzeug Albatros L 83 "Adler."*
Luftschau, 4. Jahrg., Nr. 12 (24. Juni 1931), Berlin, pp. 93-94, ills.

ALBRIGHT, HORACE M. *Skyroads to our national parks.*

Nat. Aer. Mag., Vol. 9, No. 2 (Feb. 1931), Washington, pp. 36, 45-46, ills.

ALBUQUERQUE. *See* Logan, Hub: *Hospitality—Pueblo style*.

ALFA ROMEO. *Le perfette costruzioni motoristiche per l'aviazione dell'Alfa Romeo.*

L'Ala d'Italia, Vol. 10, No. 5 (maggio 1931), pp. 347-349, ills.

ALLARD, EMILE. *Cours d'aéronautique.*

Paris, Dunod, 1931, pp. 318, ill.

ALLARD, JOHN S. *American airplanes in the Latin-American republics.*
Aero Digest, Vol. 18, No. 4 (April 1931), New York, pp. 38, 230, ills.

ALLEN, B. S. *A flying visit to Italy. The Breda works.*

Flight, No. 1186, Vol. 23, No. 38 (Sept. 18, 1931), London, pp. 951-952, ills.

ALLEN, C. B. *Aerial police of New York City.*

Aero Digest, Vol. 18, No. 3 (March 1931), New York, pp. 42-43, 142-144, ills.

— *The airline attendant's job.*

Aviation, Vol. 30, No. 4 (April 1931), New York, pp. 244-245, ills.

— *Curtiss moves to Buffalo.*

Aero Digest, Vol. 18, No. 5 (May 1931), New York, pp. 54-55, ills.

ALLEN, HUGH. *The story of the airship.*

Akron, O., Commercial Printing and Lithographing Co., 1931, 6th edition, pp. 71, ills., map,
7th edition, pp. 84, ills.

ALLEN, WILLIAM M. *Limitations of liability to passengers by air carriers.*

Journal of Air Law, Vol. 2, No. 3 (July 1931), Chicago, pp. 325-334.

ALLIED and associated powers. *Protocol amending articles 34 and 40 of the Convention for the Regulation of Aerial Navigation of October 13, 1919.*

Paris, December 11, 1929. *Irish ratification on April 9, 1930.*

Dublin, Stationery Office, 1931, pp. 4. *Irish Free State. Treaty series 1930, No. 17.*

ALLOYS. *Alloys.*

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 49-52.

— *The lightest alloy.*

Aeroplane, Vol. 40, No. 13 (April 1, 1931), London, pp. 575-576.

— *A new light alloy.*

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1200, Vol. 23, No. 52 (Dec. 25, 1931), London, pp. 1264e-1264f, 93-94.

— *Über die Herstellung und die mechanischen Eigenschaften der Al-Cu-Si Legierungen.*

Report of the Aeronautical Research Institute, Tôkyô Imperial University, No. 73 (Vol. 6, 7), (Oct. 1931), Tôkyô, pp. 141-217.

The article in Japanese is by Massaharu Goto, Sin-ichi Fukuta, Sadao Horiguchi, and Tannji Nagai.

ALLOYS. *See* Archbutt, S. L., and J. W. Jenkin: Mechanical properties of pure magnesium and certain magnesium alloys in the wrought condition—(continued).

— *See* Decherf, E.: Leforeage et le matricage des alliages légers et ultra-légers.

— *See* Gallo, G., and G. Fragapane: Leghe alluminio-cromo.

— *See* Grogan, J. D., and T. H. Schofield: Report on some properties of alloys of aluminium with thorium and silicon.

— *See* Russell, H. W., and W. A. Welcker, Jr.: Endurance and other properties at low temperatures of some alloys for aircraft use.

— *See* Tapsell, H. J., S. L. Archbutt, and J. W. Jenkin: Alloys sub-committee. Aeronautical Research Committee. Mechanical properties of pure magnesium and certain magnesium alloys in the wrought condition (continued). Mechanical properties of an "Electron" alloy.

ALSTON, R. P. Maximum lift coefficient of "Starling" with Clark YH wings. *Aeronautics, Techn. Rep. Aer. Res. Comm. 1929-1930, Vol. 1, London, 1931, pp. 297-298, diagrs. Rep. Mem. No. 1295 (Ae. 444.)*

— Stalled flight tests on a Bristol fighter fitted with auto control slots and interceptors.

Aer. Res. Comm., Rep. Mem. No. 1338 (Ae. 469), June 1930, London, 1931, pp. 3, ill., diagr.

— *See* Jones, E. T., and R. P. Alston: Longitudinal control and stability when stalled.

ALTHIN, TORSTEN. Flygkrönika; bilder och notitser ur luftfartens historia. Stockholm, Wahlström & Widstrand, 1931, pp. 61, ills.

ALTIMETER. *See* Ramsey, Logan C.: The pilot and his altimeter.

ALTITUDE. Altitude flights.

Western Flying, Vol. 10, No. 1 (July 1931), Los Angeles, Calif., p. 37.

— *See* Gutkowski, Tadeusz: Pomiar wysokości samolotów przy starcie (opis aparatów).

— *See* Hendrickson, H. B.: Altitude flights.

— *See* Hendrickson, H. B.: More altitude flights.

— *See* Jennings, W. G.: Variation of power with height. Power factor in relation to international standard atmosphere, with a method of reduction.

— *See* Jones, Bradley: How high is up? or some remarks on altitude measurements.

— *See* Lämari, Vittorio: Sul mal degli aviatori . . .

— *See* Macready, John R.: Way way up!

— *See* Mokrzycki, Andrzej: Pewne zagadnienie lotu na wysokość.

— *See* Stewart, C. J.: High altitude flying.

ALTITUDE control. *See* Nutt, A. E. Woodward, A. F. Scroggs, and E. Finn: Range of aircraft with air-cooled radial engine using altitude control.

ALTITUDE meter. *See* Braun: The Braun relative altitude meter.

ALUMINUM. La protection des alliages d'aluminium et l'alclad.
L'Aéronautique, 13me année, No. 140 (jan. 1931), Paris, pp. 32-33, ills.

— See Bossert, T. W.: Aluminum and its alloys in aircraft..

— See Buzzard, R. W., and W. H. Mutchler: Advantages of oxide films as bases for aluminum pigmented surface coating for aluminum alloys.

ALUMINUM alloys. See Rosenhain, W., J. D. Grogan, and T. H. Schofield: Gas removal and grain refinement in aluminum alloys.

— See Rosenhain, W., J. D. Grogan, and T. H. Schofield: The influence of Titanium Tetrachloride on cast aluminium alloys.

AMARILLO, TEX. See Helium: Helium plant celebrates first birthday.

AMATEURS. Practical flying for amateurs.

London, Pub. for the proprietors of Shell by Simkin Marshall, Ltd., 1931, pp. 165, ills.

AMBROSINI, ANTONIO. Degli impianti a terra necessari alla navigazione aerea (infrastruttura: aerodromi, aeroporti, campi di fortuna ed altri impianti accessori).

Riv. Aer., Anno 7, N. 5 (mag. 1931), Roma, pp. 235-252.

— Responsabilità aeronautica (caratteristiche fondamentali).
Roma, Società Anonima Editrice "Usila", 1930, pp. 141.

AMBULANCE. See Karsten, A.: Flugzeuge fuer den Krankendienst.

AMERICA. See Blee, Harry H.: The development of air transportation in America.

AMERICAN ACADEMY OF AIR LAW. Announcing the American Academy of Air Law, Washington Square East, New York, New York. A national organization with a national program.

[New York, American Academy of Air Law, 1931, pp. 15.]

AMERICAN BAR ASSOCIATION. Report of the standing committee on aeronautical law.

Presented at the meeting held at Atlantic City, N.J., September 17, 18, 19, 1931. pp. 22.

AMERICAN CLIPPER. Mrs. Hoover christens the "American clipper".

U.S. Air Services, Vol. 16, No. 11 (Nov. 1931), Washington, D.C., p. 16-17, ill.

AMERICAN SOCIETY FOR TESTING MATERIALS. Symposium on aircraft materials, held at the thirty-third annual meeting of the American Society for Testing Materials, Atlantic City, N.J., June 23 to 27, 1930. Introduction by H. C. Knerr.

Philadelphia, 1930, pp. 192.

Reprint from Proceedings of the American Society for Testing Materials, Vol. 30, Pt. II, 1930.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Airplane instrument vibration. Report and Papers Research Committees 1931, American Society Mechanical Engineers Research Publication, New York, Dec. 1931, pp. 105-109.

— The A.S.M.E. discusses aeronautics.

Aviation, Vol. 30, No. 7 (July 1931), New York, pp. 421-424, ills., diagrs., tabls.

— Progress in aeronautics. Contributed by the Aeronautics Division.

Mechanical Engineering, Vol. 53, No. 1 (Jan. 1931), New York, pp. 5-7.

AMES, GEORGE C. The airplane colony.

New York, Hydra Book Corporation, 1931, 1 vol.

AMES, JOSEPH SWEETMAN. Glancing back at 1930. Scientific progress. *Western Flying*, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Calif., pp. 40-41.

AMIOT. The Amiot 140 M military airplane (French). An all-metal multiplace high-wing monoplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 134, Feb. 13, 1931, Washington, February 1931, pp. 7, ills.

AMPHIBIAN. A diminutive amphibian.

Flight, No. 1163 Vol. 23, No. 15 (April 10, 1931), London, pp. 310-311, ills.

— See K., A.: The world's largest amphibian.

— See Mounier, P. J. J.: Igor Sikorsky en zijn amphibie-vliegtuigen.

— See Heinkel: Heinkel amphibion.

— See Klemin, Alexander: Sikorsky's contribution to huge amphibions—the S-40.

— See Sikorsky: The Sikorsky S-40 amphibion.

AMSTERDAM. De Rijks-Studiedienst voor de Luchtvaart, Amsterdam. Verslag over het jaar 1930.

's-Gravenhage Algemeene Landsdrukkerij, 1931, pp. 22.

— See Beekman, W.: In één week van Batavia naar Amsterdam.

ANDERSON, C. RIVERS. Aeronautics in the Argentine.

Flight, No. 1159, Vol. 23, No. 11 (March 13, 1931), London, p. 225.

ANDERSON, RAYMOND F. The aerodynamic characteristics of six commonly used airfoils over a large range of positive and negative angles of attack.

National Advisory Committee for Aeronautics, Technical Notes No. 397, Nov. 3, 1931, Washington, November 1931, pp. 5, diagrs., tabl.

— The aerodynamic characteristics of three tapered airfoils tested in the variable density wind tunnel.

National Advisory Committee for Aeronautics, Technical Notes No. 367, Feb. 28, 1931, Washington, February 1931, pp. 12, ill., diagrs., tabls.

— See Diehl, W. S., and R. F. Anderson: Variable density wind tunnel test data on models of the Hawker Hornbill aeroplane and the AD-1 aerofoil section.

ANDERSON, S. HERBERT. Fog penetration.

U.S. Air Services, Vol. 16, No. 7 (July 1931), Washington, pp. 20, 22-25, diagrs.

ANDES. See Steven, A. W.: Flying the "Hump" of the Andes.

ANDRÉE. De pooltocht van Andrée.

Het Vliegveld, 15de Jaarg., No. 1 (Jan. 1931), Amsterdam, pp. 19-24, ills.

ANDRÉE, SALOMON AUGUST. Ai margini della storia. Andrée.

Riv. Aer., Anno 7, N. 1 (gen. 1931), Roma, pp. 203-217, ills., port.

— Dem Pol entgegen.

Leipzig, F. A. Brockhaus, 1930, pp. 278, ills.

Herausgegeben von der Schwed. Ges. f. Anthropologie und Geographie.

— See Schäffer, Ernst: Glück ab; bahnbrecher der lüfte.

ANDREOLI, G. A. GIULIO. Azione d'impennaggio ed effetti d'elica.

Notiziario Tecnico di Aeronautica, Vol. 6, No. 12 (dic. 1930), pp. 219-234.

ANDREWS, W. R. Air-cooled engine power and weight.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1178, Vol. 23, No. 30 (July 24, 1931), London, pp. 726a-726c (49-51), tabl.

ANDREWS, W. R. *Gliders and gliding.*

Flight, No. 1174, Vol. 23, No. 26 (June 26, 1931), London, pp. 612-614, diagrs.

ANDRIANI, ORONZO. *Lubrificazione appropriata dei motori d'aviazione a caratteristiche dei lubrificanti.*

Riv. Aer., Anno 7, N. 3 (marzo 1931), Roma, pp. 458-466.

ANIMAL flight. *See* Taverne, Gaspard Louis: *Aviation naturelle; études sur la mécanique animale en vue d'applications aux machines locomotrices et spécialement à l'aéroplane*; préface de M. E. Bourdelle.

ANNUALS. *See* Hirschauer, L., et Charles Dollfus: *L'année aéronautique 1930-1931.*

— *See* Italy: *Annuario 1931.*

ANNUNZIO, GABRIELE. *See* Mendoza, Saverio Laredo de: *Gabriele d'Annunzio aviatore di guerra.*

ANTARCTIC. *See* Balchen, Bernt: *Aviation lessons of the Antarctic.*

— *See* Byrd, Richard Evelyn: *Little America: Aerial exploration in the Antarctic and the flight to the South Pole.*

ANTENNA. *See* Eisner, Fr., G. Sudeck, Rudi Schröer, und O. Zinke: *Vergrößerung der effektiven Höhe von Flugzeugschleppantennen.*

ANTI-AIRCRAFT matériel. *See* Wells, G. M.: *Development of anti-aircraft matériel.*

ANTIMONY. *See* Gough, H. J., and H. L. Cox: *The behaviour of a single crystal of antimony subjected to alternating torsional stresses.*

ANXIONNAZ, RENÉ. *Stabilisateur. Brevet français, n. 165,203, déposé le 20 octobre 1922 par M. René Anxionnaz.*

L'Aérophile, 39e année, No. 1 (15 jan. 1931), Paris, pp. 23, ill.

States that this invention is on the same principle as the one described as new in *L'Aérophile*. 15 octobre 1930, by C. H. Vances.

APE. *See* Scott-Hall, S.: *Experiments on an Ape aeroplane fitted with pilot planes.*

APOSTAL, ALEKSANDR. *See* Zhukovskii, Nikolaï Egorovich: *Théorie tourbillonnaire de l'hélice propulsive, traduit du russe par A. Apostal . . . revu et annoté par W. Wettchinkine . . . Préface de W. Margoulis.*

APPEL, WM. D., and R. K. WORNER. *An investigation of cotton for parachute cloth.*

National Advisory Committee for Aeronautics. *Technical Notes No. 393, Sept. 29, 1931, Washington, September 1931, pp. 21, tabls.*

ARCHAEOLOGY. *See* Judd, Neil M.: *The airplane aids the archaeologist in reconstructing an ancient civilization.*

ARCHBUTT, S. L., and J. W. JENKIN. *Mechanical properties of pure magnesium and certain magnesium alloys in the wrought condition—(continued).*

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1033-1048, ills., tabls. Rep. Mem. No. 1287. (M.67.)

ARCHBUTT, S. L. *See* Tapsell, H. J., S. L. Archbutt, and J. W. Jenkin: *Alloys sub-committee. Aeronautical Research Committee. Mechanical properties of pure magnesium and certain magnesium alloys in the wrought condition (continued). Mechanical properties of an "Electron" alloy.*

ARCHITECTURE. *See* Walsh, H. Vandervoort: Architectural principles applied to airport design.

ARCTIC. *See* British Arctic Air Route Expedition: The British Arctic Air Route Expedition.

- *See* Graf Zeppelin: The Zeppelin arctic expedition.
- *See* Montagnes, James: The Arctic air mail.
- *See* Montagnes, James: Plane parking in the Arctic.
- *See* Samoilowitsch, R.: "S O S in der Arktis."
- *See* Zeppelin: Wissenschaftl. Arktisfahrt des Graf Zeppelin.

ARGENTINE. *See* Anderson, C. Rivers: Aeronautics in the Argentine.

ARGUS. A new Argus engine.

Aircraft Engineering, Vol. 3, No. 31 (Sept. 1931), London, p. 219, ill.

- *See* Heinze, Edwin P. A.: The new Argus 8-cyl. engine.

— *See* Oestrich, Hermann: Untersuchung eines Flugmotoren-Geblases, Bauart Argus-Roots.

ARMAMENT. *See* Great Britain: Increased armament for military aeroplanes.

ARMANGUÉ, ANTONIO. Elementos de aviación.

Barcelona, G. Gili, 1931, pp. 214, ills., diagrs.

ARMANI, A. Ex alto ad signum. Anedotti ed episodi di bombardamenti aerei.
Roma, Libreria della stato, 1931.

ARMSTRONG SIDDELEY. Armstrong Siddeley motors.

Flygning, Årg. 9, N:R 4 o. 5 (April-Maj 1931), Stockholm, pp. 96, 100, ills.

- *See* Kuipers, C.: De Armstrong-Siddeley vliegtuigmotoren.

ARMSTRONG-WHITWORTH. *See* Handasyde, G. H.: Steel tube and strip. The works of Armstrong-Whitworth aircraft at Coventry visited and described.

ARMY-NAVY. A N standards conference.

Airway Age, Vol. 13, No. 1 (July 4, 1931), New York, pp. 44-45.

ARNALL, PHILIP. Portrait of an airman.

London, John Lane, 1931.

ARNESEN, ODD. Luftens helter, åtte stjerner pa [!] flyvningens himmel.
Osla, J. W. Cappelen, 1931, pp. 142, ills.

ARROW. The Arrow "Active."

Flight, No. 1178, Vol. 23, No. 30 (July 24, 1931), London, pp. 727-730, ills.

ARSANDAUX, L. Investigation of certain wing shapes with sections varying progressively along the span.

National Advisory Committee for Aeronautics, Technical Memorandums No. 617, April 23, 1931, Washington, April 1931, pp. 44, diagrs.

ART. Les récompenses de l'exposition "L'art et l'aéronautique."
L'Aéophile, 39e année, No. 1 (15 jan. 1931), Paris, pp. 7-8, ills.

ARTHUR, WILLIAM E. Airport development.

Aero Digest, Vol. 19, No. 1 (July 1931), New York, pp. 50-53, ills.

ARTIFICIAL horizon. *See* K., A: The aviator's artificial horizon.

ASIA. The airways in Asia.

Flight, No. 1168, Vol. 23, No. 18 (May 1, 1931), London, pp. 386-387, map.

ASJES, D. L. De vliegschool.

Het Vliegveld, 15de Jaarg., No. 8 (Aug. 1931), Amsterdam, pp. 280-281, ills.

ASKANIA. Le compte-tours Askania à transmission pneumatique à distance.

L'Aéronautique, 13me année, No. 146, Bulletin L'Aérotchnique, 9e année, No. 103 (juil. 1931), Paris, p. 252, ills.

— L'enregistreur photographique de trajectoires Askania.

L'Aéronautique, 13me année, No. 147 (août 1931), Paris, p. 300, ills.

ASPECT ratio. *See* Munk, Max Michael: The aspect ratio. Article thirteen on the principles of aerodynamics.

ATKIN, E. H. Torsion in thin cylinders.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1187, 1192, Vol. 23, No. 39, 44 (Sept. 25, Oct. 30, 1931), London, pp. 970f-970h, (70-72), 1086d-1086e, (76-77), ills.

ATLANTIC. Atlantic flight chronology.

Aero Digest, Vol. 19, No. 6 (Dec. 1931), New York, pp. 33-37, ills.

— *See* B., H.: La poste transatlantique et les accords internationaux d'aviation marchande.

— *See* Boffito, G.: Una traversata dell'Atlantico in palloncini 1876.

— *See* Bonifacio, Gaetano: Ali italiane vittoriose. La crociera aerea transatlantica dello stormo di Italo Balbo.

— *See* Connor, Harry P.: Crossing the North Atlantic.

— *See* Courtney, F. T.: Trans-Atlantic air mail.

— *See* Denmark: Dansk Atlantflygning.

— *See* Dixon, Charles: The conquest of the Atlantic by air.

— *See* Hinkler, Bert: The return of Bert Hinkler.

— *See* Italy: De eskader-oceaanvlucht der Italianen.

— *See* Italy: Italian squadron's Atlantic cruise.

— *See* McDonnell, J. S., Jr.: Present status of transatlantic service.

— *See* McDonnell, J. S., Jr.: Trans-Atlantic service.

— *See* Martelloni, Giovanni F.: Orazione non detta per il volo atlantico dell'aquila di Roma.

— *See* Newcomb, J. Arthur: Transatlantic flights, 1931.

— *See* Nosari, Adone: Ali e vele sull'Atlantico.

— *See* Rysky, Carlo de: La croisière italienne dans l'Atlantique-Sud.

ATLANTIC seaboard. *See* Van Orman, Ward T.: A preliminary meteorological survey for airship bases on the middle Atlantic seaboard.

ATLAS. *See* Great Britain. Air Ministry: The Mark I Atlas army co-operation aeroplane. With an appendix on the Atlas dual control aeroplane. Vol. 1.

— *See* Gulf Refining Company: Aviation atlas.

26 NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

ATLAS. *See* Jones, E. T.: Flight tests on an Atlas fitted with automatic slots connected with the ailerons and some data relevant to the design of auto-slots for R.A.F. 28 section wing.

ATMOSPHERE. On antics of the atmosphere.

Aeroplane, Vol. 41, No. 25 (Dec. 16, 1931), London, pp. 1353-1354.

— *See* Davies, E. LL., and O. G. Sutton: Some problems of modern meteorology, No. 5. The present position of the theory of turbulent motion in the atmosphere.

— *See* Diehl, Walter Stuart: Some approximate equations for the standard atmosphere.

— *See* Lange, K. O.: Measurement of vertical air currents in the atmosphere.

— *See* Neumark, Stefan: Badanie wolnego spadku z uwzglednieniem oporu powietrza o zmiennej gęstości.

— *See* Noto, Hisashi: Electric oscillations in the atmosphere.

— *See* Tinson, Clifford W.: Correction of aeroplane performance to standard atmosphere (Density basis).

ATOMIC heat. *See* Endō, Yositosi: Atomic heat at constant pressure of crystalline substances.

ATTAL, SALVATORE. La conquista dell'aria: L'illusione e la realtà.

Riv. Aer. Anno 7, N. 11 (nov. 1931), Roma, pp. 247-258.

AUSTIN, A. O. Lighting investigation as applied to the airplane.

U.S. Air Services, Vol. 16, No. 8 (Aug. 1931), Washington, pp. 28-33, ill.

AUSTRALIA. The Australian Christmas air mail.

Flight, No. 1200, Vol. 23, No. 52 (Dec. 25, 1931), London, pp. 1257-1259, ill.

— Developments in Australia.

Flight, No. 1162, Vol. 23, No. 14 (April 3, 1931), London, p. 297.

— De eerste Nederlandsche postvlucht naar Australië.

Het Vliegveld, 15de Jaarg., No. 7 (Juli 1931), Amsterdam, pp. 237-239, ill.

— *See* Scott, C. W. A.: Mr. Scott's record flight to Australia.

AUSTRIA. Oesterreich. Gesetzgebung. Zusammenstellung der in Oesterreich geltenden Vorschriften für den Luftverkehr.

Nachrichten für Luftfahrer, 12. Jahrg., Nr., 21-22 (30. Mai 1931), Berlin, pp. 148-151.

— Oesterreich. Vertrag zwischen der Republik Oesterreich und dem Königreich der Niederlande über den Luftverkehr.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 27 (4. Juli 1931), Berlin, pp. 188-190.

AUTOGIRO. The autogiro.

Scient. Amer. Vol. 144, No. 3 (March 1931), New York, pp. 192-194, ill.

— For the greatest achievement in American aviation.

Nat. Aer. Mag., Vol. 9, No. 5 (May 1931), Washington, pp. 31-33, ill.

— Gyroratory traffic at Hanworth.

Aeroplane, Vol. 41, No. 22 (Nov. 25, 1931), London, pp. 1224-1230.

— New autogiros.

Flight, No. 1159, Vol. 23, No. 11 (March 13, 1931), London, p. 220, ill.

— On the autogiro.

Aeroplane, Vol. 41, No. 4 (July 22, 1931), London, p. 228.

AUTO GIRO. Three commercial autogiros.

Aviation, Vol. 30, No. 7 (July 1931), New York, pp. 408-415, ills.

- Two new autogiros.
Flight, No. 1195, Vol. 23, No. 47 (Nov. 20, 1931), London, pp. 1145-1148, ills.
- El viaje más largo hecho en autogiro.
Ibérica, Ano 18, Num. 879 (23 mayo 1931), Barcelona, pp. 325-326.
- See Cierva, Juan de la: The autogiro.
- See Cierva, Juan de la, and Don Rose: Wings of tomorrow; the story of the autogiro.
- See Edison: Edison on the flying machine.
- See K., A.: A debate about the autogiro.
- See K., A.: A rival of the autogiro?
- See Kármán, Theodore von: Die Seitenwege der Luftfahrt.
- See Kellett: The Kellett autogiro.
- See Kellett: Kellett side by side autogiro.
- See Mounier, P. J. J.: Vliegende windmolens.
- See Pecker, J. S.: Autogryo rotor system.
- See Sanders, C. J., and A. H. Rawson: the book of the C. 19 autogiro; the principle of operation described together with notes on running and maintenance.

AUTOMATIC control. Automatisk kurs-styrning av flygplan.

Flygning, Årg. 9, N:R 40.5 (April-Maj 1931), Stockholm, pp. 93-95, ills.

- See Étévé: Recherches et expériences sur le pilotage automatique.

Automatic flight. An approach to automatic flight.

Western Flying, Vol. 9, No. 5 (May 1931), Los Angeles, Calif., p. 31.

AUTOMATIC stability. Deux dispositifs de stabilisation automatique. La dispositif de stabilité par gyroscopes Marmonnier. Las girouettes de stabilisation Constantin.

L'Aérophile, 39e année, No. 1 (15. jan. 1931), Paris, pp. 17-21, ills.

- See Marmonier, L.: La stabilité et la direction automatiques des avions.

AUTONOTATION. See Knight, Montgomery, and Carl J. Wenzinger: Rolling moments due to rolling and yaw for four wing models in rotation.

- See Pitcairn, Harold F.: Autorotation.

AUTOROTATIVE. See Schmidt, Wilhelm: Development of a non-autorotative airplane capable of steep landing.**AVARELLO, C.** See Zanetti, M., and C. Avarello: Manuale del fotografo d'aeronautica.**AVIA.** Le vol sans moteur.

Paris, 1931?, pp. 16, ills. Club Aéronautique Universitaire, Paris.

AVIATICUS. "Aviaticus", Jahrbuch der Deutschen Luftfahrt, 1931. Herausgegeben von der Interessengemeinschaft der Deutschen Luftfahrt: Reichsverband der Deutschen Luftfahrt-Industrie und Deutsche Luft Hansa A.-G. Berlin, Union Deutsche Verlagsgesellschaft Zweigniederlassung, 1931, pp. 404, ills.

AVIATION NEWS. The Aviation News; a reporting service for busy aviation men. Vol. 1; July 12-Oct. 25, 1930. Weekly. New York, McGraw-Hill Publishing Company, inc., 1930, pp. [380]. No more published.

AVIATION REGISTER. *See* Greene, Lewis: Aviation register.

AVIGATION. *See* Holland, Harvey Hodges: Avigation.

— *See* Jones, Bradley: Avigation.

AVIOLANDA-ROBUR. *See* Parachutes: Het Aviolanda-Robur valscherf.

AVRO. An Avro mail plane.

Aeroplane, Vol. 41, No. 7 (Aug. 1931), London, pp. 426-434, ills.
Flight, No. 1181, Vol. 23, No. 33 (Aug. 14, 1931), London, pp. 802-807, ills.

— The Avro 626 advanced training aeroplane.

Flight, No. 1175, Vol. 23, No. 27 (July 3, 1931), London, pp. xxxv-xxxviii, 635, ills.

— The Avro 627 "Mailplane" (English). A single-seat biplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 150, Aug. 31, 1931, Washington, August 1931, pp. 8, ills.

— *See* Clark, K.W., and W. G. Jennings: Full scale determination of the motion of an Avro aeroplane when stalled.

AXE, LEONARD H. Aviation insurance.

New York, Insurance Institute of America, 1931, pp. 39.

B

B. Das Kleinflugzeug für M 3450.

Die Umschau, 35 Jahrg., Heft 10 (7. März 1931), Frankfurt a. M., p. 198.

B., H. Les budgets aéronautiques.

L'Aéronautique, 13me année, No. 144 (mai 1931), Paris, p. 183.

— Le cas de l'aéropostale.

L'Aéronautique, 13me année, No. 143 (avril 1931), Paris, p. 114-115.

— La crise de l'aéronautique marchande aux États-Unis.

L'Aéronautique, 13me année, No. 145 (juin 1931), Paris, pp. 194-195, ill.

— La poste transatlantique et les accords internationaux d'aviation marchande.

L'Aéronautique, 13me année, No. 147 (août 1931), Paris, pp. 301-302, ills.

— Les records de distance et de durée sur circuit, en avion.

L'Illustration, 89e année, No. 4593 (14 mars 1931), Paris, p. 304, ill. Bossoutrot et Rossi.

BACKUS, H. A. *See* Knerr, H. C., and H. A. Backus: Development of steel wing beams for aircraft.

BADER, H. G. Dornier-Flugboot "Do S-Has".

Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 8 (21. Feb. 1931), Berlin, pp. 228-230, ills.

BADIA POLESINE, JOTTI DA. L'opera aeronautica del padre conte Francesco Lana Terzi, Bresciano.

Milano, Libreria Aeronautica, 1931.

BAES, L. Les profiles a larges ailes et less profiles de grande hauteur. 1931, pp. 80, ills.

BAESCHLIN, F. Internationales Archiv für Photogrammetrie.

Edited by F. Baeschlin, Brunn, etc., Rudolph M. Rohrer 1930, 1931. VII. Band, I. Hälfte 1924-1930, pp. viii, 202. II. Hälfte 1930-1931, pp. 4, 302, ills. map.

These two half volumes form the complete report of the International Congress of Photogrammetry held at Zurich 6-10 September 1930. The first half volume was published at the time of the congress giving an account of the technical progress and photogrammetric activity. The second half appeared over a year later covering work of the congress under fourteen separate commissions, each dealing with a part of the subject, and, as a whole covering comprehensively the whole range of activities largely from the technical side.

BAGDAD. *See* Knauss, Robert: Erster Lufthansa-Postflug nach Bagdad.

BAILEY, BENJ. F. The design of capacitor motors for best starting performance.

Department of Engineering Research, University of Michigan, Engineering Research Bulletin, No. 19, April 1931, Ann Arbor, pp. 23, diagrs., tabls.

BAISLEY, H. K. Aerial mapping in Central America.

National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, pp. 27-28, ill.

BALANCE. *See* Dowd, R. E.: Model builder's balance. Make it in your own shop.

BALBO, ITALO. Stormi in volo sull'oceano.

Milano-Verona, A. Mondadori edit. tip., 1931, pp. 258, ills.

— *See* Bonifacio, Gaetano: Ali italiane vittoriose. La crociera aerea transatlantica dello stormo di Italo Balbo.

BALCHEN, BERNT. Aviation lessons of the Antarctic. The Antarctic region, its extent, elevation, and climatic conditions—Flight problems of the Byrd expedition as told by its Chief Pilot—The planes used and their equipment—Methods used in storing planes during the winter season—Precautions which future parties should observe.

Mech. Eng., Vol. 53, No. 7 (July 1931), New York, pp. 489-497, ills.

BALCHEN, BERNT. *See* Lawrence, John: Bernt Balchen, viking of the air.

BALFOUR, L. M. J. *See* Green, E. Ramsay, and L. M. J. Balfour: An invitation to visit Yugoslavia.

BALKOM, v. De Ja.-V.A.

Het Vliegveld, 15de Jaarg., No. 4, 7 (April, Juli 1931), Amsterdam, pp. 141-142, 247, ill.

BALLISTICS. *See* Eberhard, O. v.: Ballistik.

BALLOONING. *See* Germany: De ballonsport in Duitschland.

— *See* Petschow, Robert: Freiballonsport.

BALLOONS. Nationale amerikanische Ballonwettfahrt 1931.

Luftschau, 4. Jahrg., Nr. 17 (10. Sept. 1931), Berlin, p. 53.

— *See* Emden, R.: Der Freiballon.

— *See* Neerlandia: Ballonvaart "Neerlandia" op 17 November 1930.

— *See* Sonntag: Der Freiballonsport in Zahlen.

— *See* Theuermeister, Robert: Vom Luftballon zum Zeppelin.

BALLY, J. Piccard & Kipfer. Comment ils ont pu réaliser en cabine étanche leur ascension dans la stratosphère.

Compiègne, d. de l'auteur, 1931, pp. 40, ills.

BAMBER, MILLARD JOHN. Wind tunnel tests on airfoil boundary layer control using a backward-opening slot.
National Advisory Committee for Aeronautics, Report No. 385, Sept. 8, 1931, Washington, U.S. Government Printing Office, 1931, pp. 38, ills., diagrs., tabs.

BANARJI and BARAVE. On Oberbeck's vortices.
Philosophical Magazine, Vol. 11, No. 73 (May 1931), London, pp. 1057-1081.

BANKING. *See* Cutter, Charles N.: Banking by air.

BANKS, F. RODWELL. The evolution of a Schneider engine.
Aeroplane, Vol. 41, No. 15 (Oct. 7, 1931), London, pp. 864-872, ills.

— The question of fuel quality. The technique of aero-engine fuel production with special reference to Ethyl.
Aircraft Engineering, Vol. 3, No. 29 (July 1931), London, pp. 168-170.

BARANOFF, A. v., AND L. HOPF. Combined pitching and yawing motion of airplanes.
National Advisory Committee for Aeronautics, Technical Memorandums No. 620, May 14, 1931, Washington, May 1931, pp. 29, diagrs.

BARBERO, T. L. I cento aeroplani Caproni, 1909-1931. A Cura di "Aeronautica", rivista mensile internazionale.
Milano, ediz. Aeronautica, 1931, pp. 43, ills.

BARBIERI, FORTUNATO. Navigazione aerea; corso allievi piloti anno 1931.
Roma, Stabilimento tipo-litografico di A. Sampaolesi, 1931, pp. 128, ills., diagrs.

BARÈS. Les forces aériennes et le ministère de l'air.
L'Aéophile, 39e année, No. 2 (15 fév. 1931), Paris, p. 33.

BARKER, FOWLER W. Air pioneers of the west.
Aero Digest, Vol. 18, No. 2 (Feb. 1931), New York, pp. 40-43, 120, ills.

BARNABY, HATTIE MEYERS. Let's go to the Elmira soaring meet!
U.S. Air Services, Vol. 16, No. 8 (Aug. 1931), Washington, p. 27.

— Suggested by the Washington Air Circus.
U.S. Air Services, Vol. 16, No. 6 (June 1931), Washington, pp. 39, 41.

BARNARD, CHARLES DOUGLAS. Barnard on learning to fly.
London, S. Low, Marston and Co., Ltd., 1931, pp. xi, 172, ills., diagrs.

BARNITZ, RICHARD B. The effect of airplane design on airports.
Airway Age, Vol. 13, No. 5 (Aug. 1, 1931), New York, pp. 134-136, ill.

— Gleaned from the Conference.
Airport Section, Western Flying, Vol. 9, No. 5 (May 1931), Los Angeles, Calif., pp. 85-87.

— How the law can help airports.
Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Calif., pp. 75-76.

— Safety at airports.
U.S. Air Services, Vol. 16, No. 11 (Nov. 1931), Washington, D.C., pp. 35-37.

BARROS. The Barros stall warning device.
Flight, No. 1181, Vol. 23, No. 33 (Aug. 14, 1931), London, p. 812.

BARROWS, GEORGE H. The lighter-than-air leviathan.
The Washington Post (Magazine), Aug. 2, 1931, Washington, pp. 3, 11, ills.

BARTARELLI, A. *See* Caproni, Guasti Timina, e A. Bartarelli: Francesco Zambecchi aeronauta; Bologna 1752-1812.

BARTLA. Metoda wykreszenia rodziny profili R. Bartla.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Kwartalne Nr. 1, Warszawa, 19—, pp.

BARTOCCI, ENZO. Rassegna delle teorie enunciate e degli studi svolti sino ad oggi sul volo a vela.
L'Aerotecnica, Vol. 11, No. 10 (ott. 1931), Roma, pp. 1269-1283, ills. Abstract in english p. 1340.

BATAVIA. *See* Beekman, W.: In één week van Batavia naar Amsterdam.

— *See* Spit, G.: Amsterdam-Batavia met Zeppelins.

BATEMAN, H. *See* Lock, C. N. H., and H. Bateman: Airscrews at negative torque.

BATSON, A. S., H. B. IRVING, AND S. B. GATES. Spinning experiments on a single-seater fighter. Part I.—Further model experiments, by A. S. Batson and H. B. Irving; Part II.—Full scale spinning tests, by S. B. Gates.
Aer. Res. Comm., Rep. Mem., No. 1278 (Ae. 424-T. 2823 Spin 8), August 1929, London, 1931, pp. 10, ills., diagrs., tabl.

BATSON, A. S. *See* Irving, H. B., A. S. Batson, and A. L. Maidens: Rolling and sideslip experiments on a model slotted biplane of R.A.F. 31 section.

— *See* Irving, H. B., and A. S. Batson: Some early model experiments on devices for improving lateral control near the stall.

— *See* Irving, H. B., and A. S. Batson: Spinning of a model of the Fairey IIIIf seaplane.

— *See* Williams, D. H., and A. S. Batson: Pressure distribution over a yawed aerofoil, by D. H. Williams, with an appendix on rolling moments on a yawed aerofoil, by A. S. Batson.

BATTEN, J. D. Wing-beats-II.
Journ. Roy. Aer. Soc., Vol. 35, No. 252 (Dec. 1931), London, pp. 1140-1151, ills., diagrs.

BATTERIES. *See* Smithowski, John G.: Construction and care of storage batteries.

BAUBIAC, J. *See* Crausse, E., et J. Baubiac: Sur l'application d'une méthode d'enregistrement à l'étude des tourbillons se produisant dans les liquides.

— *See* Crausse, E., et J. Baubiac: Sur les tourbillons secondaires se produisant à l'aval d'un obstacle immergé dans un liquide.

BAUMGARTEN-CRUSIUS, ARTUR. Die rakete als weltfriedenstaube.
Leipzig, Verband der Raketen-forscher und -förderer, 1931, pp. 174, ills., diagrs.

BAUMHAUER, A. G. von. Vergadering van de W. G. L. te Kiel.
Het Vliegveld, 15 de Jaarg., No. 8 (Aug. 1931), Amsterdam, pp. 268-272, ills.

BEACONS. Utprovning av flygfyrar.
Flygning, Årg. 9, N:R 7 (Juli 1931), Stockholm, pp. 136-137, ills.

— *See* Daugherty, R. A.: Forestry towers as airway beacons.

— *See* Hinman, W. S., jr.: Automatic volume control for aircraft.

— *See* Lighting: Aga flygfyrar.

— *See* Toulman-Smith, A. K.: The range of air line beacons.

BEADLE, J. B. Air survey for Hoover Dam.
Aero Digest, Vol. 19, No. 1 (July 1931), New York, pp. 39-43, ills.

BEAMS. *See* Huber, T.: Zginanie belek prostych o przekrojach wiotkich.

BEARD, ALBERT PAUL. *See* Peck, William Cecil, and Albert P. Beard: Static, drop, and flight tests on Musselman type airwheels.

BEARINGS. *See* Taylor, E. S.: Bearing loads on radial-engine crankshafts.

BECK, WALDEMAR C.-A. Le budget aéronautique allemand pour 1931.
L'Aéronautique, 13me année, No. 144 (mai 1931), Paris, pp. 183-185.

BECKER, PAUL. Connecticut—an aviation leader. Rapid progress made under state aeronautics department.
Aero Digest, Vol. 18, No. 6 (June 1931), New York, pp. 45, 152, ill.

BEDELL, FREDERICK. The airplane a practical discussion of the principles of airplane flight. Rewritten and enlarged with the assistance of Theodore E. Thompson.
London, Macmillan and Co., Ltd., 1931, pp. xiii, 371.

BEEKMAN, W. In één week van Batavia naar Amsterdam.
Het Vliegveld, 15 de Jaarg., No. 6 (Juni 1931), Amsterdam, pp. 200-202, ills.

BEHMANN, MARIO. Un nuovo motore di aviazione.
Riv. Aer., Anno 7, N. 2 (feb. 1931), Roma, pp. 290-294, ills., diagrs.

BEINHORN. Elli Beinhorn, Schlerf und Udet erzählen.
Luftschau, 4. Jahrg., Nr. 9 (10. Mai 1931), Berlin, pp. 65-67, ports.

BELGIUM. Belgien. Zollvorschriften. Ministerialerlass vom 15. Juli 1930 über die Vereinfachung der Zollabfertigung im Luftfahrer.
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 25 (20. Juni 1931), Berlin, pp. 173-176.

— “Fireflies” for Belgium.
Flight, No. 1176, Vol. 23, No. 28 (July 10, 1931), London, p. 672, ills.

— Guide des aérodromes Belges.
Bruxelles, Admistration de l'Aéronautique, 1931.

— Lufttüchtigkeit. Kgl. Erlass zur Regelung der Lufttüchtigkeit von Luftfahrzeugen vom 27. Dezember 1930.
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 12 (21. März 1931), Berlin, pp. 71-73.

— Verordnung. Kgl. Entschliessung vom 11. Mai 1931 zur Änderung der Belgischen Luftfahrtverordnung vom 27. November 1919.
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 41 (10. Okt. 1931), Berlin, pp. 298-299.

BELL, A. H. *See* Jones, R., and A. H. Bell: Biplane fins on a model of R. 101.

— *See* Jones, R., and A. H. Bell: Experiments on models of a compressed air wind tunnel.

BELL TELEPHONE laboratories. Aircraft radio development.
New York, Bureau of Publication, Bell Telephone Laboratories, 1930, pp. 26, ills., diagrs.
This reprint of a series of articles which appeared in Bell Laboratories Record is issued to present a connected story of the development of the Western Electric aircraft radio equipment.

BELTRAMO, ERNESTO. Aerei idrosiluranti.
Riv. Aer., Anno 7, N. 3 (marzo 1931), Roma, pp. 431-442.

BÉNARD, HENRI. Nouvelles installations pour l'étude des sillages à l'Institut de Mécanique des Fluides.
L'Aéronautique, 13me année, No. 147, Bulletin L'Aérotechnique, 92 année, No. 104 (août 1931), Paris, pp. 291-293, ills.

BÉNARD-KARMAN. *See* Dupin, P., et Trissé-Solier: *Hydrodynamique.—Sur les tourbillons alternés de Bénard-Karman et la loi de similitude dynamique de Reynolds.*

BENNETT, DALE ELMER. *See* Tuttle, Alonzo Hubert, and Dale Elmer Bennett: *Extent of power of Congress over aviation.*

BERÄTTAR, BJÖRKVALL. *Min son flygaren.*

Flygning, Årg. 9, N:R 12 (Dec. 1931), Stockholm, p. 241, port.

BERCHTOLD, WILLIAM E. All for one—one for all. *The accomplishments of the Aeronautical Chamber of Commerce.*

Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Cal., pp. 28-31.

BERGLING, JOSEPH C. Flying the rubber glider.

The Take-Off, Vol. 3, No. 1 (March 1931), Washington, pp. 1, 7.

BERLIN. Årets flygprogram fastställt vid konferens i Berlin.

Flygning, Årg. 9, N:R 2 (Febr. 1931), Stockholm, pp. 28, 36.

— *See* Rozendaal, John: *Berlijnsche brief.*

BERLIN-TOKIO. Berlin-Tokio in 10 Tagen. *Aus dem Reisebericht des japanischen Fliegers Yoshihara.*

Luftschau, 4. Jahrg., Nr. 4 (24. Feb. 1931), Berlin, pp. 26-27, ill.

BERNARD. The Bernard 80 G. R. long-distance airplane (French). A two-place cantilever monoplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 147, July 11, 1931, Washington, July 1931, pp. 6, ills.

— Le monoplan Bernard 80 G. R. du record du monde de distance en circuit. *L'Aéronautique*, 13me année, No. 145 (juin 1931), Paris, pp. 197-201, ills.

— *See* L., P.: *Le poste de commande de Bernard à gouvernes conjuguées.*

— *See* Léglise, Pierre: The Bernard 120 seaplane (French). A 1,400 hp. single-seat monoplane racer.

BERNARDI, MARIO DE. Single unit control.

Aero Digest, Vol. 19, No. 4 (Oct. 1931), New York, pp. 72-74, ills.

BERTIN, CH. *See* Charcot, Jean: *Rapport du Dr. Jean Charcot sur les tables de navigation du Commandant Ch. Bertin.*

BESANÇON, GEORGES. L'année aéronautique 1930.

L'Aérophile, 39e année, No. 5, 6 (15 mai, 15 juin 1931), Paris, pp. 131-134, 170-175, ills.

BESSIÈRE, P.-L. À propos des accidents causés par les avions à la surface du sol. *L'Aérophile*, 39e année, No. 12 (15 déc. 1931), Paris, p. 372.

— La naissance d'un droit nouveau.

L'Aérophile, 39e année, No. 10 (15 oct. 1931), Paris, pp. 317-318.

— Le passager à titre gratuit ne peut réclamer une indemnité au pilote, en cas d'accident, que si celui-ci a commis une faute.

L'Aérophile, 39e année, No. 7 (15 juil. 1931), Paris, p. 215.

— La responsabilité civile de l'exploitant comparée à celle de l'automobiliste. *L'Aérophile*, 39e année, No. 8 (15 août 1931), Paris, pp. 251-252.

— La responsabilité du transporteur.

L'Aérophile, 39e année, No. 3 (15 mars 1931), Paris, pp. 86-87.

BEST, ROBERT DONALD. *See* Marvin, Charles Frederick, jr., and Robert D. Best: *Flame movement and pressure development in an engine cylinder.*

BETAZ, BAUR DE. Einiges über internationale Luftfahrtorganisationen und Konferenzen.

Luftschau, 4. Jahrg., Nr. 6, (24. März 1931), Berlin, pp. 41-42,

BETZ, ALBERT. Mikromanometer.

Wien, W., und F. Harms: Handbuch der Experimentalphysik, 'Bd. 4, 1. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. 511-551, illus.

BEYER-DESIMON, MAX VON. Flughafenplanungen.

Berlin, Verlag von Wilhelm Ernst & Sohn, 1931, pp. 156, illus.

BIBESCO. L'accident du Prince Bibesco.

L'Illustration, 89e année, No. 4599 (25 avril 1931), Paris, p. 507, ill.

BIBESCO, GEORGES. Le Prince Georges Bibesco, Président de la Fédération Aéronautique Internationale.

Bull. Féd. Aér. Int., 12e année, No. 44 (jan. 1931), Paris, pp. 5-6, port.

BIBESCO, PRINCE GEORGE. Le tragique voyage du Président de la F.A.I.

Bull. Féd. Aér. Int., 12e année, No. 46-47 (juil.-oct. 1931), Paris, pp. 110-113, ill.

BIBLIOGRAPHY. See Brockett, Paul: Bibliography of Aeronautics 1929.

— See Seattle Public Library: List of books in the Seattle Public Library.

BIECHTELER, CURT. Messung des Einflusses des Schraubenstrahls auf den Ausschlag des Seitenruders im Geradeausflug.

Jahrbuch 1931 der Deutschen Versuchsanstalt für luftfahrt, E. V., München und Berlin, 1931, pp. 709-711, illus., diagrs.

BIENIEK, Czesław. Obliczanie momentu aerodynamicznego dla płatów o stałym kształcie profilu i o różnych obrysach i rozchyleniach. (Sur le calcul du moment aérodynamique pour les ailes à profil constant et à contours et dièdres différents.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 6, (Nr. 29), Warszawa, 1931, pp. 75-92, illus., diagrs., tabls.

BIERMANN, ARNOLD ERNEST. See Schey, Oscar William, and Arnold E. Biermann: The effect of valve timing upon the performance of a supercharged engine at altitude and an unsupercharged engine at sea level.

BIERMANN, GERD. Weltraumschiffahrt? Eine kurze studie des problems. Bremen, F. Leuwer, 1931, pp. 43, illus.

BIGELOW, A. A. Airport growth in 1930-31.

Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 72-74, illus.

BIHLER, ULRICH. Der Luftfahrer; ein wegweiser mit ratschlägen und auskünften über die einstellungsbedingungen, den werdegang und die befähigung als verkehrs-, segel-, sport- und kunstflieger, als freiballon-, luftschifführer und fallschirmpilot und über die spezialberufe in der luftfahrt.

Gera, Aero-nautika-verlag, 1931, pp. 143, illus., map.

BILBAULT, G. Adaptation directe du groupe motopropulseur par la méthode graphique à échelles logarithmiques.

L'Aéronautique, 13me année, No. 147, 148 Bulletin L'Aérotechnique, 9e année, No. 104, 105 (août, sept. 1931), Paris, pp. 283-290, 321-325, diagrs.

BINGHAM, HIRAM. The future of aviation.

Nat. Aer. Mag., Vol. 9, No. 8 (Aug. 1931), Washington, pp. 8-13.

— National conference on uniform aeronautic regulatory laws. Program of the National Aeronautic Association as related to uniformity in aeronautic legislation and regulation.

Air Law Review, Vol. 2, No. 3 (July 1931), New York, pp. 372-379.

BINNIE, A. M. The influence of oxygen on corrosion fatigue.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 994-996, ills., diagrs. Rep. Mem. No. 1244. (M. 63.)

BIPLANE fins. *See* Jones, R., and A. H. Bell: Biplane fins on a model of R. 101.

BIPLANES. *See* Bonder, Julian, i Piotr Szymański: Contribution à la théorie du biplan.

BIRD, W. G. The influence of atmospheric humidity and other factors upon the static lift of airships.

Journ. Roy. Aer. Soc., Vol. 35, No. 251 (Nov. 1931), London, pp. 973-1039, diagrs.

BIRD flight. *See* Tåning, A. Vedel: Ravens flying upsidedown.

BIRMINGHAM. *See* York, Jack C.: Birmingham, Alabama has new port.

BIRNN, ROLAND. An aerial jaunt around Long Island.

Nat. Aer. Mag., Vol. 9, No. 3 (March 1931), Washington, pp. 34-36, ills.

— Army Air Corps insignia.

Curtis-Wright Review, Vol. 2, No. 1 (March 1931), New York, p. 15.

— The 1st air division.

U.S. Air Services, Vol. 16, No. 6 (June 1931), Washington, pp. 15-18.

— The Ordnance show—Air Corps assisting.

U.S. Air Services, Vol. 16, No. 11 (Nov. 1931), Washington, D.C., pp. 31-34, ill.

— Smoke screens from the sky.

Nat. Aer. Mag., Vol. 9, No. 10 (Oct. 1931), Washington, pp. 23-26, ills.

— Such was the 1st provisional air division.

U.S. Air Services, Vol. 16, No. 7 (July 1931), Washington, pp. 33-36.

— War birds of the army.

U.S. Air Services, Vol. 16, No. 7 (July 1931), Washington, pp. 18-19, ills.

BISAIL, AURELIUS. Flugmodelle in theorie und praxis; einführung in die grundbegriffe des fluges und anleitung zum bau von flugmodellen mit gummiantrieb nach verschiedenen baumethoden.

Wien, Verlag Zeitschrift "Flug", H. Pittner, 1931, pp. 54, ills.

BISHOP, ROY. *See* California: Report of the Joint Legislative Committee on Aviation.

BJÖRKVALI, KNUT. *See* Vitt, Leonard: Flygarprofiler Knut Björkvali.

BLACK ARCHIBALD. How long will it last?

Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 38-39, diagrs.

— Looking back at January's prediction.

Airway Age, Vol. 13, No. 1 (Jul. 4, 1931), New York, pp. 36, 45, diagr.

— Record and trend of the industry.

Airway Age, Vol. 12, No. 1-5, 10 (Jan.-May 2, June 6, 1931), New York, pp. 36-38, 154-155, 252-253, 356-357, 458-459, 578-579; Vol. 13, No. 1, 5, 10, 14 (July 4, Aug. 1, Sept. 5, Oct. 3, 1931), pp. 34-35, 128-129, 208-209, 272-273, diagrs.

BLACKBURN. *See* Coombes, L. P., and R. K. Cushing: Lift and drag of Blackburn "Iris."

BLACKBURN, E. C. JR. Heat and ventilation.

Aviation, Vol. 30, No. 5, 6 (May, June 1931), New York, pp. 300-304, 365-369, ills.

BLACKPOOL. The Blackpool pageant.

Flight, No. 1177, Vol. 23, No. 29 (July 17, 1931), London, pp. 688-692, ills.

BLAKE, DEAN. Weather reporting for the Air Corps.

U.S. Air Services, Vol. 16, No. 7 (July 1931), Washington, pp. 44, 46.

BLANCHET, GEORGES. Aviation et art maritime.

L'Aérophile, 39e année, No. 2 (15 fév. 1931), Paris, p. 60.

— La Coupe.

L'Aérophile, 39e année, No. 10 (15 Oct. 1931), Paris, pp. 291-293, ills, port.

— Personnalités contemporaines. Julien Serviès.

L'Aérophile, 39e année, No. 5 (15 mai 1931), Paris, p. 130, port.

BLANKENBURG. Katapultflug über 1200 km.

Luftschau, 4. Jahrg., Nr. 19 (10. Okt. 1931), Berlin, p. 79.

BLAU GAS. *See* Teed, P. L.: Gas fuel for airships. The manufacture of Blau Gas, with details of some possible alternatives.

BLEE, HARRY H. The developement of air transportation in America.

Nat. Aer. Mag., Vol. 9, No. 5 (May 1931), Washington, pp. 11-16, 25, ills. map.

— Protección de hangares de aeroplanos. Resumen del informe del comite de investigaciones sobre el control de hangares para aeroplanos por applicación automática del agua.

Ingeniera, Vol. 5, No. 2 (feb. 1931), México.

BLERIOT. The Bleriot 110 airplane (French). A long-distance high-wing monoplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 138, March 10, 1931, Washington, March 1931, pp. 9, ills.

BLIND flying. Blind flying. A cabin aircraft which has been adapted for instruction in flying by instruments.

Flight, No. 1173, Vol. 23, No. 25 (June 19, 1931), London, p. 554, ills.

— A new instrument for blind flying.

Aeroplane, Vol. 41, No. 8 (Aug. 19, 1931), London, pp. 495-496, ills. The Reid-Sigrist Turn Indicator.

— *See* Bradbrooke, F. D.: An experience of blind flying.

— *See* Celler, Frederic: Landing blind.

— *See* Diamond, H., and F. W. Dunmore: Airplanes land blind—guided by radio.

— *See* Instrument flying: On "instrument flying."

— *See* Jenkins, H. F.: Blind flying and some conclusions.

— *See* Klemin, Alexander: Electrical aids to blind flying.

— *See* Kruesi, G. G.: A new homing device for blind flying.

— *See* Lindner, C. J.: Blindflygning och dess instrument.

— *See* Stark, Howard Cyrus: Blind flying or instrument flying? Instruction book.

— *See* Weber, K.: Blindfliegen.

BLOCK, WALTER. Die Prüfung von Objektiven auf Verzeichnungsfehler.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 567-579, ills., diagrs., tabl.

BLOUDEK. The Bloudek XV. A Jugo-Slav low-wing monoplane.

Flight, No. 1164, Vol. 23, No. 16 (April 17, 1931), London, p. 336, ills.

BLUM, RENÉ. *Les assurances aériennes.*
Paris, Recueil Sirey, 1930, pp. xi, 421.

BOCK, GÜNTHER. *Grossflugzeuge.*
Göttingen, Verlag Vandenhoeck & Ruprecht, 1931, pp. 40, illus.
Aus Naturwissenschaft und Technik, Heft 3.

BODKA. *Profile Bodka.*
Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Kwartalne Nr. 1, Warszawa, 19—.

BOEDECKER, KENNETH J. *Engine servicing and service organizations.*
Aviation, Vol. 30, No. 2 (Feb. 1931), New York, pp. 94-97, illus.

— *Overhaul of Wright aircraft engines.*
Aviation Engineering, Vol. 5, No. 5 (Dec. 1931), Washington, N.J., pp. 40-42, illus.

BOEING AIRPLANE COMPANY. *Handbook of instructions for the assembly and maintenance with parts catalog of the Boeing type P-12E and P-12F airplanes.*
Seattle, Boeing Airplane Co., Oct. 1931, pp. 172, illus., diagrs., tabls.

— *See Wilson, John: Making airplanes safe. Inspection methods of the Boeing Airplane Company.*

BÖEN. *See Küssner, Hans Georg: Beanspruchung von Flugzeugflügeln durch Böen.*

BOERLAGE, G. D., and J. J. BROEZE. *The ignition quality of fuels in compression-ignition engines.*
Engineering, Vol. 132, Nos. 3435, 3438 (Nov. 13, Dec. 4, 1931), pp. 603-606, 687-689, illus.

BOEVING. *See Dowd, R. E.: The Boeing devices.*

BOFFITO, G. *Nota retrospettive documentarie d'aerotecnica.*
L'Aerotecnica, Vol. 11, N. 11 (Nov. 1931), Roma, pp. 1482-1485.

— *Una traversata dell'Atlantico in pallone nel 1876.*
Riv. Aer., Anno 7, N. 3 (marzo 1931), Roma, pp. 589-590.

BOHRER, WALT. *Forest patrol in the Pacific northwest.*
Western Flying, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Cal., p. 91.

BOLIVIA. *Bolivien. Verordnung. Luftfahrtverordnung vom 24. Okt. 1930.*
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 16 (18. April 1931), Berlin, pp. 106-108.

BOLLA, FILIPPO. *La frequenza del vento al suolo e a quote a Palermo.*
L'Aerotecnica, Vol. 11, N. 8, 9 (agosto, sett. 1931), Roma, pp. 954-970, 1126-1128, diagrs.
English abstract pp. 1064-1065.

BOLLENRATH, F. *Wrinkling phenomena of thin flat plates subjected to shear stresses.*
National Advisory Committee for Aeronautics, Technical Memorandums No. 601, Jan. 19, 1931, Washington, January 1931, pp. 34, illus., diagrs., tabls.

BOLTS. *See Teichmann, Alfred, und Karl Borkmann: Versuche mit langen Bolzen in Holzbauteilen.*

BOMBING planes. *En- eller flermotoriga bombflygplan.*
Flygning, Årg. 9, N:o 9 (Sept. 1931), Stockholm, p. 172.

BONDER, JULIAN, i PIOTR SZYMAŃSKI. *Contribution à la théorie du biplan.*
Prace Instytutu Aerodynamicznego w Warszawie, Zeszyt II, Warszawa, 1928, pp. 53-72, illus.

BONDER, JULIAN. Quelques remarques concernant les essais de l'hélice propulsive installée obliquement dans un courant d'air.

Prace Instytutu Aerodynamicznego w Warszawie prowadzone pod kierunkiem prof. C.K. Witoszyńskiego, Zeszyt III, Warszawa, 1930, pp. 71-79, ill.

— Sur la construction des profils d'aviation.

Prace Instytutu Aerodynamicznego w Warszawie, Zeszyt I, Warszawa, 1927, pp. 3-35, ill., tabs.

BONDER, JULIAN, i PIOTR SZYMAŃSKI. Sur le multiplan en tandem.

Prace Instytutu Aerodynamicznego w Warszawie, Zeszyt II, Warszawa, 1928, 1-24, ill., diagr.

BONGENHIELM, FOLKE. Flygplatsen halle—Leipzig.

Flygning, Årg. 9, N:R 2 (Febr. 1931), Stockholm, pp. 30-31, ill.

BONIFACIO, F. Aspetti tecnici, economici e politici del traffico aereo.

L'Aerotecnica, Vol. 11, N. 8 (agosto 1931), Roma, pp. 889-922.

English abstract, p. 1063.

BONIFACIO, GAETANO. Ali italiane vittoriose. La crociera aerea transatlantica dello stormo di Italo Balbo.

Livorno, tip. R. giusti, 1931, pp. 19.

BONNALIE, ALAN F. The mechanic specializes.

Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Calif., pp. 32-34, ill.

BOONE, ANDREW R. Engine service in the Navy.

Western Flying, Vol. 10, No. 4 (Oct. 1931), Los Angeles, Calif., pp. 25-27, ill.

— From carrier decks.

Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, Calif., pp. 18-21, ill.

— Recent developments in radio fog flying.

U.S. Air Services, Vol. 16, No. 5 (May 1931), Washington, pp. 21-23, 56, ill.

— What the Air Corps learned.

Western Flying, Vol. 10, No. 1 (July 1931), Los Angeles, Calif., pp. 26-29, ill.

BORKMANN, KARL. See Teichmann, Alfred, und Karl Borkmann: Versuche mit langen Bolzen in Holzbauteilen.

BORN, F. Die Stellungslichter der Wasser- und Luftfahrzeuge.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 9.14. Heft (15. Mai, 28. Juli 1931), München und Berlin, pp. 253-255, 428-429, ill.

BOSSERT, T. W. Aluminum and its alloys in aircraft.

Metals & Alloys, Vol. 1, No. 7 (Jan. 1930), New York, pp. 325-326, ill.

BOSSOLASCO, MARIO. La meteorologia ed il volo a vela.

L'Aerotecnica, Vol. 11, No. 11 (nov. 1931), Roma, pp. 1432-1437. Abstract in English, p. 1491.

BOSOUTROT. See B., H.: Les records de distance et de durée sur circuit, en avion.

BOSWORTH, CLARENCE E. Take planes to the prospects.

Airway Age, Vol. 12, No. 2 (Feb. 1931), New York, pp. 165-168, ill.

BOUCHÉ, HENRI. Une entreprise aéronautique sans précédent.

L'Illustration, 88e année, No. 4582 (27 déc. 1930), Paris, pp. 586-587, ill.

BOUCHÉ, HENRI, et P. R. C. GROVES. Études sur la situation économique, administrative et juridique de la navigation aérienne internationale.

Genève, 1930.

BOUCHÉ, Henri. 10,500 kilomètres en avion sans escale.

L'Illustration, 89e année, No. 4607 (20 avril 1931), Paris, p. 304, ill.

BOUILLOUX-LAFONT, CLAUDE. *L'aviation commerciale en France; son histoire—son état actuel—son influence sur la vie économique.*

Paris, F.-L. Vivien, pp. 128, ills., diagrs.

BOULTON, B. C. *Design of riveted joints.*

Aviation Engineering, Vol. 5, No. 4 (Nov. 1931), Washington, N.J., pp. 26-27, diagrs. tabls.

BOUMAN, L. F. *Een nieuwe koers in de ontwikeling der radio op vliegtuigen.*

Het Vliegveld, 15 de Jaarg., Nos. 5-6 (Mei-Juni 1931), Amsterdam, pp. 154-155, 190-193, ills.

— *Eenige persoonlijke ervaringen met brandbluschapparaten in het luchthavenbedrijf.*

Het Vliegveld, 15de Jaarg., No. 10, 11 (Oct., Nov. 1931), Amsterdam, pp. 342-343, 380-382, ills.

— *De financieele zijde van het luchthavenbedrijf.*

Het Vliegveld, 15de Jaarg., No. 1 (Jan. 1931), Amsterdam, pp. 5-10, ills.

— *Het wonderboek der luchtvaart.*

Utrecht, W. de Haan, 1931, pp. 119, ill.

BOUNDARY layer. *See* Abbott, I. H.: *Experiments with an airfoil model on which the boundary layer is controlled without the use of supplementary equipment.*

— *See* Eliás, Franz: *The transference of heat from a hot plate to an air stream.*

— *See* Falkner, V. M., and Sylvia W. Skan: *Some approximate solutions of the boundary layer equations.*

— *See* Glauert, H.: *The importance of the boundary layer.*

— *See* Green, J. J.: *Breakaway of boundary layer on a cylinder and an airfoil.*

— *See* Ower, E., and C. T. Hutton: *Investigation of the boundary layers and the drags of two streamline bodies.*

— *See* Schrenk, Oskar: *Experiments with a wing from which the boundary layer is removed by suction.*

— *See* Simmons, L. F. G.: *Experiments relating to the flow in the boundary layer of an airship model.*

— *See* Tanner, T.: *Movement of smoke in the boundary layer of an aerofoil without and with slot.*

— *See* Townend, H. C. H.: *A study of slots, rings & boundary layer control by blowing.*

— *See* Townend, H. C. H.: *A study of slots, rings and jet control of the boundary layer.*

BOURGET. *Les terrains—Le Bourget.*

L'Aéophile, 39e année, No. 9 (15 sept. 1931), Paris, p. 257.

BOWEN, ROBERT SIDNEY. *Flying from the ground up.*

New York, Whittlesey House, McGraw-Hill Book Company, inc., 1931, pp. vi, 234, ills.

BOWEN, ROBERT SIDNEY, Jr. *Trends of the industry during 1930.*

Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 15-17.

BRADBROOK, F. D. *An experience of blind flying.*

Aeroplane, Vol. 41, No. 11 (Sept. 9, 1931), London, pp. 656-658, ill.

BRADBROOKE, F. D. The light aeroplane manual.

London, Chapman and Hall, Ltd., 1931, pp. viii, 251, ills.
Foreword by Captain G. de Havilland.

— Round the N.F.S. stations.

Aeroplane, Vol. 40, No. 13 (April 1, 1931), London, pp. 564, 566, 568, ills.

— Sabena goes north.

Aeroplane, Vol. 40, No. 18 (May 6, 1931), London, pp. 839-840, 842, ills.

— The why and wherefore of the contest. (Schneider trophy.)

Aeroplane, Vol. 41, No. 11 (Sept. 9, 1931), London, pp. 620-622.

BRADFIELD, F. B. Centre of pressure travel of symmetrical section at small incidence.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 854-862,
diags., tabls. Rep. Mem. No. 1294. (Ae. 443.)

BRADFIELD, F. B., and W. G. A. PERRING. Drag tests on a large model in a small tunnel.

Aer. Res. Comm., Rep. Mem., No. 1371 (Ae. 498-T. 3054), November 1930, London, 1931,
pp. 11, ills., diags., tabls.

BRADFIELD, F. B., and R. A. FAIRTHORNE. Drag tests on full scale float of S. 5.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 232-239, ills., diags.,
tabls.

R.A.E. Report No. B. A. 814.

BRADFIELD, F. B. The effect on lift and drag of corrugating the surface of an aerofoil.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 240-244, diags., tabls.
R.A.E. Report No. B.A. 578.

— The 5-ft. open jet wind tunnel, R.A.F.

Aer. Resl Comm., Rep. Mem., No. 1364, (Ae 492-T. 3030), November 1930, London, 1931,
pp. 11, ills., diags.

— Maximum lift coefficient of R.A.F. 30 all-moving rudder.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 906-909,
diags. Rep. Mem. No. 1321. (Ae. 458.)

BRADFIELD, F. B., K. W. CLARK, and R. A. FAIRTHORNE. Maximum lift in closed and open jet tunnels.

Aer. Res. Comm., Rep. Mem. No. 1363, (Ae. 491-T. 2977 and "a"), December 1930, London,
1931, pp. 19, ills., diags., tabls.

BRADFIELD, F. B., and F. W. G. GREENER. Wind tunnel test of the increased drag of a quarter scale float on adding rivets.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 229-231, diagr., tabl.
R.A.E. Report No. B.A. 784.

BRADFIELD, F. B., and H. DAVIES. Wind tunnel tests of model of "Crusader".

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, pp. 215-217, ill.
R.A.E. Report No. B.A. 604.

BRADLEY, W. F. Jalbert heavy oil engine using carburetor and pre-mixing cylinder under construction for the French air service.

Aut. Ind., Vol. 64, No. 14 (April 4, 1931), New York, pp. 548-549, ills.

BRAKES. Bendix brakes for aeroplanes.

Aeroplane, Vol. 40, No. 24 (June 17, 1931), London, pp. 1164, 1166, ills.

— Wheel brakes and undercarriages.

Flight, No. 1198, Vol. 23, No. 50 (Dec. 11, 1931), London, pp. 1224-1225.

— *See* L., P.: Les nouveaux systèmes Charlestrop de transmission et de freinage.

BRAKES. *See* Léglise, Pierre: The new "Charlestop" remote brake transmission and control.

- *See* Michael, Franz: Experiments with airplane brakes.
- *See* Michael, Franz: Versuche mit Flugzeugbremsen.
- *See* Neumark, Stefan: Dalsze uwagi o hamowaniu kół lądującego samolotu.
- *See* Neumark, Stefan: Hamowanie kół lądującego samolotu.
- *See* Waring-Brown, R.: Aeroplane braking systems.
- *See* Waring-Brown, R.: Hydraulic brakes for aircraft. The theoretical and practical qualities of the type discussed with descriptions of prominent examples.

BRANDES, E. W. Prospecting by air over Papuan jungles.

Nat. Aer. Mag., Vol. 9, No. 3 (March 1931), Washington, pp. 25-32, ills.

BRANDT, RICHARD. Untersuchung über die Erregung von Drehschwingungen in Reihenmotoren.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 343-357, ills., diagrs., tabls.

BRANT. The Brant "Scud" intermediate glider.

Flight, No. 1154, Bol. 23, No. 6 (Feb. 6, 1931), London, pp. 112-113, ills.

BRATT, K. A. *See* Inter-parliamentary Union: What would be the character of a new war? Enquiry organised by the Inter-parliamentary Union.

BRAUN. The Braun relative altitude meter.

Flight, No. 1191, Vol. 23, No. 43 (Oct. 23, 1931), London, p. 1063, ills.

BRAUNSCHWEIG. *See* Hoeck, James: Braunschweig cradle of German aviation.

BRAZIL. The Regia Aeronautica in Brazil.

Aeroplane, Vol. 40, No. 3 (Jan. 21, 1931), London, p. 98.

BREAKAWAY. *See* Green, J. J.: Breakaway of boundary layer on a cylinder and an airfoil.

BREAKING TESTS. *See* Hertel, Heinrich: Dynamische Bruchversuche mit Flugzeugbauteilen.

BRECKENRIDGE, F. C. Transmission of light through fog. An attempt to correlate the results of six investigations made in U.S.A. in recent years.

Aircraft Engineering, Vol. 3, No. 32 (Oct. 1931), London, pp. 261-264, diagrs.

BREDA WORKS. *See* Allen, B. S.: A flying visit to Italy. The Breda works.

BREE, J. DE. Het Jumbo-vrachtvliegtuig der K.L.M.

Het Vliegveld, 15de Jaarg., No. 5 (Mei 1931), Amsterdam, pp. 156-158, ills.

BRÉGUET. Breguet military airplane, Type 33. A two-place long-distance sesquiplane for observation and bombing.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 151, Sept. 25, 1931, Washington, September 1931, pp. 16, ills.

— Breguet 390 T commercial airplane (French). A ten-seat all-steel sesquiplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 149, Aug. 11, 1931, Washington, August 1931, pp. 4, ills.

BRÉGUET. Stan samolotu Bréguet XIX Nr. 60.3 po odbytym locie Warszawa-Tokio- Warszawa.

Instytut Badań Technicznych Lotnictwa, Sprawozdania i Prace, Warszawa, 1926, pp. 5-15, ills., tabls.

BRÉGUET, LOUIS. Aérotechnique. Suspension aérodynamique du véhicule aérien.

C. R. Acad. Sci., T. 193, No. 21 (23 nov. 1931), Paris, pp. 994-996.

— Airships big as steamships tomorrow.

The Sunday Star (Magazine), July 26, 1931, Washington, pp. 5, 19.

BREITHAUPT, A. D. Methods of maintaining the equilibrium of airships.

Aeroplane, Vol. 40, No. 14 (April 8, 1931), London, pp. 603-604, 606, ills.

BREITHAUPT, J. Vorteile des Luftschiffs als Verkehrsmittel auf Groesstentfernungen.

Schiffbau, Bd. 2, Nr. 10 (15. Mai 1931), Berlin, pp. 238-242, ill.

BREMER, WÄINÖ. See Vitt, Leonard: Flygarprofiler Kapten Wäinö Bremer.

BRENNAN, J. F. A method of determining the altitude in the atmosphere above sea level where the freezing point of water occurs.

Monthly Weather Review, Vol. 59, No. 2 (Feb. 1931), Washington, p. 75, ills.

BRENNER, PAUL. Baustofffragen bei der Konstruktion von Flugzeugen.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 21. Heft (14. Nov. 1931), München und Berlin pp. 637-648, ills., diagrs., tabls.

— Ergebnisse von Korrosions- und Oberflächen-schutzversuchen mit Aluminium-Walzlegierungen.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V. München und Berlin, 1931, pp. 505-520, ills., diagrs., tabls.

— Korrosionsversuche mit Duralplat-Nietverbindungen.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 11. Heft (15. Juni 1931), München und Berlin, pp. 344-346, ills.

BRIDGEMAN, O. C., C. A. Ross and H. S. WHITE. Airplane fuel-line temperature.

Journ. Soc. Automotive Engineers, Vol. 29, No. 2 (Aug. 1931), New York, pp. 121-125, ills.

BRIDGEMAN, LEONARD. Britain's representatives.

Aeroplane, Vol. 41, No. 11 (Sept. 9, 1931), London, pp. 624-630, ills.

Schneider trophy.

— See Grey, Charles Grey, and Leonhard Bridgeman: All the world's aircraft 1930.

BRIGGS, J. C. Modern engine production.

Aircraft Engineering, Vol. 3, No. 26 (April 1931), London, pp. 80-86.

BRIGGS, LYMAN JAMES, and H. L. DRYDEN. Aerodynamic characteristics of circular-arc airfoils at high speeds.

National Advisory Committee for Aeronautics, Report No. 365, Jan. 12, 1931, Washington, U.S. Government Printing Office, 1930, pp. 14, ills., diagrs., tabl.

BRIGGS, LYMAN JAMES. Present status of aircraft instruments. Report prepared by the subcommittee on instruments.

National Advisory Committee for Aeronautics, Report No. 371, Jan. 31, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 26.

BRINKLEY, RUSS. Create a demand—then sell.

Airway Age, Vol. 13, No. 1 (July 4, 1931), New York, pp. 53-54.

BRINTZINGER, WILHELM, PAUL v. HANDEL und HEINRICH VIEHMANN. Erschütterungsstörungen bei ortbeweglichen Empfängern.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 633-644, ills., diagrs.

BRISTOL. Bristol type 118 general purposes aircraft.

Flight, No. 1197, Vol. 23, No. 49 (Dec. 4, 1931), London, pp. 1185-1187, ills.

— See Clark, K. W.: The motions, at a stall, of a Bristol fighter aeroplane with slot and aileron control on both planes.

— See Fedden, A.H.E.: A memorandum on the design and development of the Bristol Mercury 1927 Schneider Trophy racing engine.

— See Halliday, A. S., and C. H. Burge: Lateral stability calculations for the Bristol fighter aeroplane.

— See Halliday, A. S.: Stability derivatives of the Bristol fighter.

— See Ormerod, A.: Full scale measurements of lift coefficients of a Bristol fighter with R.A.F. 34 wings and slots.

BRITISH ARCTIC AIR ROUTE EXPEDITION. The British Arctic Air Route Expedition.

The Geographical Journal, Vols. 77, 78, No. 6, 3 (June, Sept. 1931), London, p. 291, 551-554.

BRITISH STANDARDS INSTITUTION. British Standards Institution.

Aircraft Engineering, Vol. 3, No. 34 (Dec. 1931), London, p. 312.

BROCKETT, PAUL. Bibliography of aeronautics 1929.

National Advisory Committee for Aeronautics, Washington, United States Government Printing office, 1930, pp. vi, 242.

BROEZE, J. J. See Boerlage, G. D., and J. J. Broeze: The ignition quality of fuels in compression-ignition engines.

BROWN, CHARLES G. Torsional rigidity in cantilever wings.

Aviation Engineering, Vol. 5, No. 5 (Dec. 1931), Washington, N.J., pp. 11-14, ills., diagrs.

BROWN, D. MACLEAN. Inspection of wiring plate angles.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1196, Vol. 23, No. 48 (Nov. 27, 1931), London, p. 1174e, (85).

BROWN, GEORGE GRANGER. The volatility of motor fuels.

Engineering Research Bulletin, No. 14, May 1930, Department of Engineering Research, University of Michigan, Ann Arbor.

BROWN, THAD H. State regulation of radio.

Journal of Air Law, Vol. 2, No. 1 (Jan. 1931), Chicago, pp. 35-37.

BROWN, WALTER F. Glancing back at 1930. Mail by air.

Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Calif., p. 40.

— See Manning, George H.: Mr. Brown sharpens his pencil and cuts the air mail rates.

BROWNBACK. Brownback "Bumble Bee" three cylinder light aircraft engine is air cooled.

Automotive Ind., Vo. 65, No. 2 (July 1931), New York, p. 49, ill.

BROWNBACK, HENRY LOWE. Simplicity in light plane engine design.

Aviation Engineering, Vol. 5, No. 4 (Nov. 1931), Washington, N.J., pp. 23-25, ills.

BRUCE, MILDRED MARY EASTER (PETRE), "HON. MRS. VICTOR BRUCE". The Bluebird's flight.

London, Chapman & Hall, Ltd., 1931, pp. xii, 292, ills., maps.

Foreword by Colonel the Master of Semphill.

BRYANT, L. W., and D. H. WILLIAMS. The application of the method of operators to the calculation of the disturbed motion of an aeroplane.

Aer. Res. Comm., Rep. Mem., No. 1346 (Ae. 478-T. 2992), July 1930, London, 1931, pp. 13.

BRYANT, L. W., and A. S. HALLIDAY. Measurement of lateral derivatives of the whirling arm.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 736-741 diagrs. Rep. Mem. No. 1249. (Ae. 400.)

BRYANT, L. W. Note on change of wind with height.

Aer. Res. Comm., Rep. Mem., No. 1407 (Ae. 528-T. 3045a), March 1931, London, 1931, pp. 8, diagrs., tabs.

BUCHAREST. Wind tunnel of the Bucharest Polytechnic Institute.

National Advisory Committee for Aeronautics, Technical Memorandums No. 651, Dec. 17, 1931, Washington, December 1931, pp. 2, ills.

— *See* Fédération Aéronautique Internationale: Conférence de Bucarest du 6 au 14 juin 1931.

— *See* Fédération Aéronautique Internationale: Conférence de Bucarest du 8 au 15 juin 1931.

— *See* Fédération Aéronautique Internationale: De F.A.I.-conferentie te Bucarest.

BUCK, ROBERT. Burning up the sky.

New York, London, G. P. Putnam's Sons, 1931, pp. ix, 178, ills.

BUCKELS. *See* Hertel, Heinrich: Steifigkeit, Festigkeit und Beanspruchung von Anschnallgurten und Sesseln.

BUCKLING PROBLEM. *See* Sezawa, Katsutada, and Kei Kubo: The buckling of a cylinder shell under torsion.

— *See* Sezawa, Katsutada: On the buckling under edge thrusts of a rectangular plate clamped at four edges.

BUDGETS. *See* B., H.: Les budgets aéronautiques.

— *See* Beck, Waldemar C.-A.: Le budget aéronautique allemand pour 1931.

— *See* Germany: Der Deutsche Lufthaushalt 1931.

— *See* Great Britain: Air estimates.

BUDIG, F. La stabilisation marine des hydravions par plans de dérive.

L'Aérophile 39e année, No. 7 (15 juil. 1931), Paris, pp. 209-210, ills.

BUDWIG, GILBERT. Airworthiness requirements for certificate for export.

Aero digest, Vol. 18, No. 4 (April 1931), New York, pp. 46-47.

BUENOS AIRES. The British aircraft industry at Buenos Aires.

Aeroplane, Vol. 40, No. 9 (March 4, 1931), London, p. 366.

— The British Empire exhibition, Buenos Aires, 1931.

Aeroplane, Vol. 40, No. 14 (April 8, 1931), London, pp. 615-616, 618, ills.

— British Empire trade exhibition, Buenos Aires, 1931.

Flight, No. 1153, Vol. 23, No. 5, 11 (Jan. 30, March 13, 1931), London, pp. 91, 221-225, ills.

— The Buenos Aires exhibition.

Aeroplane, Vol. 40, No. 11 (March 18, 1931) London, pp. 452, 454, ills.

— Buenos Aires. The Prince opens the exhibition.

Flight, No. 1160, Vol. 23, No. 12 (March 20, 1931) London, p. 245, ill.

BUFFALO. Developing the Buffalo municipal airport.
Airway Age, Vol. 12, No. 10 (Jun. 6, 1931), New York, pp. 583-585, ill.

BUFFETING. A fresh phenomenon. The importance to be attached to buffeting.
Aircraft Engineering, Vol. 3, No. 24 (Feb. 1931), London, pp. 25-26.

— The phenomenon of "Buffeting."
Aircraft Engineering, Vol. 3, No. 24 (Feb. 1931), London, pp. 31-34.

BULGARIA. Bulgarien. Sperrgebiete.
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 45-46 (14 Nov. 1931), Berlin, pp. 332-334, map.

BULMAN, G. P. Engines at the Paris Aero show. Reflections on the state of continental engine development and practice, as exemplified by the exhibits.
Aircraft Engineering, Vol. 3, No. 23 (Jan. 1931), London, pp. 9-11, ill.

BUOYANCY. *See* Lotz, Irmgard: Berechnung der Auftriebsverteilung beliebig geformter Flügel.

— *See* Töpfer, Carl: Auftriebsverteilung und Längsstabilität.

BUREAU OF STANDARDS. *See* Blee, Harry H.: Protección de hangares de aeroplanos. Resumen del informe del comité de investigaciones sobre el control de hangares para aeroplanos por aplicación automática del agua.

BURGE, CYRIL G. Handbook of aeronautics; a compendium of the modern practice of aeronautical engineering, containing over 500 graphs and diagrams, tables and formulae for the aeronautical engineer; published under the authority of the Council of the Royal Aeronautical Society.
London, Gale & Polden, Ltd., [1931], pp. xvi, 703, ill., diagrs., tables.

BURGE, C. H. *See* Halliday, A. S., and C. H. Burge: Lateral stability calculations for the Bristol fighter aeroplane.

BURGERS, J. M. Hitzdrahtmessungen.
Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 1. Teil.
Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. 635-667, ill.

BURGESS, C. P. Water-recovery apparatus for airships.
Mech. Eng., Vol. 53, No. 7 (July 1931), New York, pp. 529-530.

BURNELLI. *See* Wertenson, F.: Development of the High-speed Burnelli type monoplane.

— *See* Wertenson, F.: Investigation and development of the Burnelli type airplane.

— *See* Wertenson, F.: Investigation of the Burnelli type airplane.

BURTIS, THOMSON. Slim Evans, air ranger.
New York, H. Holt and Company, 1931, pp. 222.

BUSEMANN, A. Gasdynamik.
Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 1. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. 341-460, ill., diagrs.

BUTTERWORTH, WILLIAM. National conference on uniform aeronautic regulatory laws. Importance of uniform aeronautic regulatory laws to American commerce and industry.
Air Law Review, Vol. 2, No. 1 (Jan. 1931), New York, pp. 60-64.

BUZZARD, R. W., and W. H. MUTCHELTER. Advantages of oxide films as bases for aluminum pigmented surface coating for aluminum alloys.
National Advisory Committee for Aeronautics, Technical Notes No. 400, Nov. 24, 1931, Washington, November 1931, pp. 16, ill., diagrs.

BYLEWSKI, JERZY. Badanie fal krótkich przeprowadzone przez Instytut Badań Technicznych Lotnictwa wspólnie z Instytutem Radjotechnicznym.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 2, Warszawa, 1930, pp. 13-24, diagrs.

— Druga seria badań fal krótkich, przeprowadzona przez Instytut Badań Technicznych Lotnictwa wspólnie z Instytutem Radjotechnicznym.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne, Nr. 3, Warszawa, 1930, pp. 32-35, ills.

— *See* Sokolew, Dymitry, i Jerzy Bylewski: Wyniki 2 serji badań nad rozchodzeniem się fal krótkich.

BYOIR, CARL. Graphic facts about aviation. March 1, 1931. Compiled by Carl Byoir and associates.

New York, 1931, pp. 27, ills., diagrs., map.

BYRD, RICHARD EVELYN. Flieger über dem sechsten Erdteil. Meine Südpolexpedition 1928/30.

Leipzig, Verlag F. A. Brockhaus, 1931, pp. 280, ills.

— Little America: Aerial exploration in the Antarctic and the flight to the South Pole.

London, G. P. Putnam's Sons, 1931, pp. xvi, 422, ills.

— *See* Shäffer, Ernst: Glück ab; bahnbrecher der lüfte.

C

C.A.M.S. The C.A.M.S. 60 seaplane (French). A twin-engine bombing and torpedo monoplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 141, March 31, 1931, Washington, April 1931, pp. 8, ills.

CABIN. *See* Gough, Melvin N.: The variation in pressure in the cabin of an airplane in flight.

CACOPARDO, SALVATORE. The collective aeronautical conventions and the possibility of their unification.

Air Law Review, Vol. 2, No. 2 (April 1931), New York, pp. 207-216.

CALDWELL, Cy. Aerial invasion of the United States.

Aero Digest, Vol. 18, No. 3 (March 1931), New York, pp. 40-41, 132-140, map.

— Campaigners aloft.

Aero Digest, Vol. 19, No. 1 (July 1931), New York, pp. 44-46, 122, ills.

— Evolution of the Pilot.

Aero Digest, Vol. 18, No. 4 (April 1931), New York, pp. 42-43, 240, ills.

— "Gangway for Moses."

Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 48, 134.

CALDWELL, FRANK W. Aspects of airscrew design.

Aircraft Engineering, Vol. 3, No. 31 (Sept. 1931), London, p. 215.

— Care of the detachable-blade, metal propeller.

Aviation, Vol. 30, No. 6 (June 1931), New York, pp. 357-359, ills., tabs.

CALEMBERT, BARON LOUIS DE. Nungesser—as I knew him.

Western Flying, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Calif., pp. 41-43, ill., port.

CALIFORNIA. Report of the Joint Legislative Committee on Aviation. Presented to Governor C. C. Young, December 31, 1930, pursuant to Assembly concurrent resolution No. 9.

Sacramento, California State Printing Office, 1931, pp. 11.
Roy Bishop, Chairman.

— *See* Little, Delbert M.: Some effects of California mountain barriers on upper air winds and sea-level isobars.

— *See* United States Congress. Senate. Committee on Naval Affairs: Authorizing the Secretary of the Navy to accept a lighter-than-air base, and to construct necessary improvements thereon . . . Report to accompany H.R. 6810.

CALLEN, C. *See* Perring, W. G. A., and C. Callen: The influence of a stopped airscrew on the lift and drag of an aerofoil.

— *See* Perring, W. G. A., and C. Callen: Moments and forces on a yawed model aeroplane.

— *See* Perring, W. G. A., and C. Callen: Validity of large scale tests in an open jet wind tunnel.

CAMBRIDGE UNIVERSITY. Cambridge University air squadron.

Flight, No. 1176, Vol. 23, No. 28 (July 10, 1931), London, pp. 674-676, ills.

CAMICHEL, C., et P. DUPIN. Hydrodynamique.—Sur les divers modes de construction des filets à l'entrée d'un ajutage.

C. R. Acad. Sci., T. 193, No. 2 (15. juil. 1931), Paris, pp. 102-103, ills.

CAMM, F. J. Model aeroplanes and airships, with special chapters on gliders, helicopters, wing-flapping models, kites, and full-size gliding.

London, G. Newnes, Ltd., 1931, pp. 96, ills., diagrs.

CAMPBELL, H. A. Applications of electricity in aircraft.

Aviation Engineering, Vol. 5, No. 4 (Nov. 1931), Washington, N.J., pp. 13-17, ills., diagrs., tabls.

CANADA. Air transport in northern Canada.

Aeroplane, Vol. 41, No. 20 (Nov. 11, 1931), London, pp. 1123-1130, ills.

— Canadian aviation.

Aviation, Vol. 30, No. 3 (March 1931), New York, pp. 166-167, diagrs., tabls.

— Exchange of notes (August 29, and October 22, 1929) recording an agreement between Canada and the United States of America regarding the admission of civil aircraft, the issuance of pilots' licences and the acceptance of certificates of airworthiness for aircraft imported as merchandise.

Ottawa, F. A. Acland, Printer to the King, 1930, pp. 5. Treaty Series, 1929, No. 13.

— Exchange of notes between His Majesty's government in Canada and the United States government regarding civil aircraft. Washington, August 29/October 22, 1929.

London, H. M. Stationery Office, 1931, pp. 5. Great Britain, Foreign Office. Treaty Series, 1931, No. 8. Reprint of Canadian Treaty Series No. 13, 1929.

— Notes on aerodrome development for airports, private and intermediate, seaplane ports and seaplane anchorages in Canada. Published by the Department of National Defence, Civil aviation branch to facilitate a standard development.

Ottawa, F. A. Acland, Printer to the King, 1931, pp. 66, ills., tabls.

— The Puss Moth in Canada.

Flight, No. 1149, Vol. 23, No. 1 (Jan. 2, 1931), London, pp. 8-9, ills.

CANADA. Quarterly Civil Air Liaison Letter Nos. 14-17.

Department of National Defence, Civil Aviation Branch, 31st March, 30th June, 30th September, and 31st December 1931 (mimeographed), Ottawa, pp. 8, 6, 25, 7.

— Report on civil aviation and civil government air operations for the year 1930.

Dominion of Canada, Department of National Defence, Ottawa, 1931, pp. 77, ills., tabs., map.

— *See* Claxton, Brooke: Legislative control of radio in Canada.

— *See* Drew, George Alexander: Canada's fighting airmen.

— *See* Hanson, Earl: Canadian Aviation—1930.

— *See* Latchford, Stephen: Aviation relations between the United States and Canada prior to negotiation of the air navigation arrangement of 1929.

— *See* Montagnes, James: Air-mapping the Canadian Northland.

— *See* Montagnes, James: Canada's aviation industry.

— *See* Norway, N. S.: R. 100 Canadian flight 1930. Journal written on board the ship. Nothing has been added.

— *See* Reid, T. M.: Winter flying in northern Canada.

— *See* Steel, W. A.: Communication on civil airways in Canada.

— *See* United States: Arrangement effected by exchange of notes between the United States and the Dominion of Canada. Admission of civil aircraft, the issuance of pilots' licenses and the acceptance of certificates of air worthiness for aircraft imported as merchandise. Signed August 29, 1929, and October 22, 1929.

CANAL. *See* Canal: Canal surveying from the air.CANARD. *See* Focke, H.: Le principe du "canard" et ses avantages.

— *See* Heinze, Edwin P. A.: Focke-Wulf canard monoplane.

— *See* Margoulis, W.: Le prix de la stabilité longitudinale de l'avion et du "canard."

CANNEGIETER, H. G. Het Internationale Pooljaar 1932-1933.

Het Vliegveld, 15de Jaarg., No. 10 (Oct. 1931), Amsterdam, pp. 346-347.

— Passagiersvaart van den ballon "Hollandia" te Oosterbeek op 16 Mei. Het Vliegveld, 15de Jaarg., No. 6 (Juni 1931), Amsterdam, p. 210.

CANTILEVER. *See* Abit, Edmond: L'interaction des longerons dans les ailes cantilever.

— *See* Bernard: The Bernard 80 G. R. long-distance airplane (French). A two-place cantilever monoplane.

— *See* Dewoitine: The Dewoitine D. 30 commercial airplane (French). A high-wing cantilever monoplane.

— *See* Dewoitine: Dewoitine D 33 commercial airplane (French). A low-wing cantilever monoplane.

— *See* I. A. R.: The "I. A. R." pursuit airplane (Roumanian). A one-place cantilever low-wing monoplane.

CANTILEVER. *See* S. P. C. A.: The S. P. C. A. 40 T commercial airplane (French). An all-metal cantilever monoplane.

— *See* Wibault: The Wibault 280 T. 10 commercial airplane (French). An all-metal, cantilever, low-wing monoplane.

CANTONI, ALBERTO. L'aviazione civile e la difesa nazionale. *Riv. Aer.*, Vol. 7, N. 1 (gen. 1931), Roma, pp. 38-48.

CAPETTI, ANTONIO. Il motore leggero ad olio pesante. *L'Aerotechnica*, Vol. 11, N. 12 (Dic. 1931), Roma, pp. 1495-1505.

— Ricerche sperimentali sull'uso di miscele diluite e di miscele fortemente preriscaldate nei motori a carburazione. *L'Aerotechnica*, Vol. 11, n. 3 (marzo 1931), Roma, pp. 255-268, diagrs. English abstract pp. 388-389.

— Sul calcolo dei periodi di oscillazione torsionale libera degli alberi. *L'Aerotechnica*, Vol. 11, n. 2 (Feb. 1931), Roma, pp. 157-166, digars. English abstract pp. 249-250.

CAPON, R. S. Part I.—A method of calculating suitable airscrew characteristics to meet given conditions. The resulting airscrew performance. Part II.—A comparison of the observed change of performance consequent on a change of airscrew and the change predicted by the methods of Part I. *Aeronautics, Techn. Rep. Aer. Res. Comm.*, 1929-1930, Vol. 1, London, 1931, pp. 460-503, diagrs., tabls. *Rep. Mem. No. 1254.* (Ae. 403.)

CAPRONI. The Caproni 90 P.B. Italy's giant bomber. *Flight*, No. 1150, Vol. 23, No. 2 (Jan. 9, 1931), London, pp. 27-28, ills.

— *See* Barbero, T. L.: I cento aeroplani Caproni, 1909-1931.

CAPRONI, GUASTI TIMINA, e A. BARTARELLI. Francesco Zambeccari aeronauta; Bologna 1752-1812. *Milano, Museo Caproni Bergamo, Istituto it. d'arti grafiche*, 1931, pp. 125, ill.

CARACCIOLLO, MARIANO MORENO. *See* Toussaint, A.: La aviación actual. Versión española de Mariano Moreno Caracciolo.

CARBURATION. *See* Capetti, A.: Ricerche sperimentali sull'uso di miscele diluite e di miscele fortemente preriscaldate nei motori a carburazione.

CARBURETORS. A watch-dog for the carburetor. *Scient. Amer.*, Vol. 144, No. 2 (Feb. 1931), New York, pp. 92-93, ills.

— *See* Clothier, W. C.: Carburetter fuel metering characteristics.

— *See* Jacuński, Julian: Przyrząd do czechowania dysz gaźnikowych.

— *See* Scheubel, F. N.: On atomization in carburetors.

— *See* Schey, Osca William, and Vern G. Rollin: The effect of increased carburetor pressure on engine performance at several compressed ratios.

CARGANICO, VICTOR. Kurzer Bericht über die Geschäftliche Sitzung der XX. Ordentlichen Mitglieder-Versammlung der Wissenschaftlichen Gesellschaft für Luftfahrt E. V. (WGL) am 20. Mai 1931, 9 Uhr, in der Aula der Universität Kiel. *Zeitschr. Flugt. Motorluftsch.*, 22. Jahrg., 13. Heft (14. Juli 1931), München und Berlin, pp. 389-393.

CARRIERS. Deck flying. *Aeroplane*, Vol. 40, No. 4 (Jan. 28, 1931), London, pp. 157-162, ills.

CARRIERS. *Dek-vliegen.*

Het Vliegveld, 15de Jaarg., No. 4, 5 (April, Mei 1931), Amsterdam, pp. 137-141, 169-175, illus.

— A submarine aircraft carrier.

Flight, No. 1179, Vol. 23, No. 31 (July 31, 1931), London, pp. 759-763, illus.

— *See Aeland, W. R. D.: Deck flying.*

— *See Boone, Andrew R.: From carrier decks.*

— *See K., A.: A submarine aircraft carrier.*

CARSON, JAMES E. A sea story awaiting a Conrad.

U.S. Air Services, Vol. 16, No. 12 (Dec. 1931), Washington, D.C., pp. 26-27, ill.

CARTER, B. C., and N. S. MUIR. Torsional vibration of crankshafts. Beardmore "Tornado" airship engine investigations.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1049-1103, diagrs., Rep. Mem. No. 1303. (E. 39.)

CARTER, LANE. When our wings began to sprout.

The Washington Post (Magazine), July 19, 1931, Washington, pp. 4, 15, illus port.

CARTER, W. G. Notes and comments on the design of "The Crusader." Part I. Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 318-319.

CARUS-VERLAG, BERLIN. Eine chronik des flug-gedankens bis zum luftverkehr im dienste der völkerverbindung.

Berlin, Verlag Licht und Schatten, 1930, pp. 138, illus. maps.

CASPARI, W. Ergebnisse des internationalen Kongresses für Flugsicherheit.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 11. Heft (15. Juni 1931), München und Berlin, p. 334.

CASSENS, J. Gewichtsermittlung der wichtigsten einfachen Träger.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 15. Heft (14. Aug. 1931), München und Berlin, pp. 456-463, illus., diagrs.

— Systematischer Gewichtsvergleich an räumlichen Fachwerken.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 12. Heft (29. Juni 1931), München und Berlin, pp. 357-362, illus., tabls.

CASSIDY, LOUIS C. Does the Havana aerial convention fulfill a need?

Air law Review, Vol. 2, No. 1 (Jan. 1931), New York, pp. 39-43.

CASSINIS, G. Ricerche sul metodo aerofotogrammetrico Nistri.

L'Aerotecnica, Vol. 11, N. 10 (ott. 1931), Roma, pp. 1241-1248.

CASSONE, FERDINANDO. Il potere aereo.

Riv. Aer., Anno 7, N. 8 (agosto 1931), Roma, pp. 187-222, diagrs.

CASTAGNA, A. Prove su radiatori per motori di aviazione.

L'Aeronautica, Vol. 11, N. 2 (feb. 1931), Roma, pp. 167-182, illus., diagrs. English abstract pp. 250-251.

CATAPULTS. Aircraft catapults. Scottish firm markets two successful types.

Flight, No. 1157, Vol. 23, No. 9 (Feb. 27, 1931), London, pp. 177-179, illus.

— Catapult launching for aeroplanes.

Aeronautical Engineering, suppl. to the Aeroplane, Vol. 40, No. 8 (Feb. 25, 1931), London, pp. 327-328, 330, 332, illus.

— Catapulte per il lancio de velivoli.

Riv. Aer., Anno 7, n. 7 (luglio 1931), Roma, pp. 106-119, illus.

— Catapulting a "Virginia."

Flight, No. 1170, Vol. 23, No. 22 (May 29, 1931), London, pp. 469-471, illus.

CATAPULTS. *See* Baumhauer, A. G. von: *Vergadering van de W.G.L. te Kiel.*

— *See* Cuthill, R. W., and H. S. Hinchman: *History and commercial value of the airplane launching catapult.*

— *See* Forza, Ernesto: *Catapultamento di velivoli da nave in mare ondoso.*

— *See* Heinkel, Ernst, *flugzeugwerke, g.m.b.h.:* *Katapulte und katapultieren von flugzeugen.*

— *See* Schwarzler, Karl: *Flugzeugkatapulte. Allgemeines, Berechnungen und Messungen.*

— *See* Wackett, L. J.: *Launching by catapult.*

CAUNTER, C. F. *Light aero engines.*
New York, Isaac Pitman & Sons, 1931, pp. 277.

CAYGILL, L. E. *See* Harris, R. G., and L. E. Caygill: *Model tests on Supermarine S. 4 seaplane. Effect of lowering wing.*

— *See* Harris, R. G., L. E. Caygill, and R. A. Fairthorne: *Wind tunnel experiments on steam condensing radiators.*

— *See* Harris, R. G., L. E. Caygill, and R. A. Fairthorne: *Wind tunnel tests on Gloster and Supermarine wing radiators.*

CEILING. *See* Diehl, Walter Stuart: *A new chart for estimating the absolute ceiling of an airplane.*

CELLER, FREDERIC. *Landing blind.*
Aviation, Vol. 30, No. 12 (Dec. 1931), New York, pp. 699-700, ills.

CENTRAL AMERICA. *Air transport in Central America.*
Aeroplane, Vol. 40, No. 5 (Feb. 4, 1931), London, pp. 201-202, ills.

CENTRAL FLYING SCHOOL. *See* Robertson, F. A. de V.: *The Central Flying School.*

CENTRIFUGAL pumps. *See* Spannhake, W.: *Kreiselpumpen und Turbinen.*

CESAR. *Englandflug des deutschen Luftfahrtverbandes.*
Luftschau, 4. Jahrg., Nr. 10 (24. Mai 1931), Berlin, p. 73.

— *Fragen des Tages.*
Luftschau, 4. Jahrg., Nr. 16, 17 (24. Aug., 10. Sept. 1931), Berlin, pp. 40-41, 49.

— *Marga v. Etzdorf erzählt. . .*
Luftschau, 4. Jahrg., Nr. 1 (10. Jan. 1931), Berlin, p. 3.

CESAR, WOLFGANG.
Auf dem Augsburger Luftfahrertag.
Luftschau, 4. Jahrg., Nr. 14 (24. Juli 1931), Berlin, pp. 13-14.

— *Erster Berliner Flachlandsegelflugtag.*
Luftschau, 4. Jahrg., Nr. 13 (10. Juli 1931), Berlin, pp. 8-9.

— *Fragen des Tages.*
Luftschau, 4. Jahrg., Nr. 1 (10. Jan. 1931), Berlin, p. 2.

CHALLENGE DE TOURISME. *Challenge international de tourisme aérien 1930.*
Bull. Féd. Aér. int., 12e année, No. 44 (Jan. 1931), Paris, pp. 17-20, tabls.

CHAMBERS, C. M. F. *See* *Amphibian: A diminutive amphibian.*

CHANGEUX. Dynamique du dirigeable.
1931, pp. 103, ills.

CHARCOT, JEAN. Rapport du Dr. Jean Charcot sur le travail du Commandant Voitoux "La navigation aérienne transatlantique."
C.R. Acad. Sci., T. 193, No. 24 (14 déc. 1931), Paris, p. 1244.

— Rapport du Dr. Jean Charcot sur les tables de navigation du Commandant Ch. Bertin.
C.R. Acad. Sci., T. 193, No. 24 (14 déc. 1931), Paris, pp. 1243-1244.

CHARLES, DON. The costs of flying your own plane.
National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, pp. 17, 69, ills.

CHARLESTOP. See L., P.: Les nouveaux systèmes Charlestop de transmission et de freinage.

— See Léglise, Pierre: The new "Charlestop" remote brake transmission and control.

CHASE, JOHN SAMSON, and NOLIE MUMNEY. Physical requirements for commercial flyers.
Denver, The Clason Publishing Co., 1931, pp. 31, ills., diagrs.

CHEMICAL warfare. See Ferretti, Virgilio: La guerra chimica e la difesa della popolazione civile.

CHENOWETH, OPIE. Engines in 1930.
Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 44-46, ills.

CHICAGO. The brain of the airport.
Chicago, Uniform airport control system, 1931, pp. 16, ills.

CHILTON, R. Air-cooled cylinder-head design.
Journ. Soc. Automotive Engineers, Vol. 29, No. 3 (Sept. 1931), New York, pp. 185-189, 189-191, 227, ill.

CHILE. Chile. Zollflughäfen.
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 13-14 (4. April 1931), Berlin, p. 92.

CHINA. See Hartmann, H.: Deutsches Luftbildunternehmen in China.

— See Jones, W. E. F.: Aircraft in China.

— See Lin, Wo-chiang: The development of aviation and aeronautical law in China.

CHITTY, LETITIA, and R. V. SOUTHWELL. A contribution to the analysis of primary stresses in the hull of a rigid airship.
Journ. Roy. Aer. Soc., Vol. 35, No. 252 (Dec. 1931), London, pp. 1103-1130, diagrs., tabls.

CHITTY, LETITIA. See Southwell, R. V., and Letitia Chitty: On the problem of hydrodynamic stability.—I. Uniform shearing motion in a viscous fluid.

CHRISTIAN, MANFRED. A pioneer inverted engine. The Argus "As 8", fully described and illustrated with drawings and a power curve.
Aircraft Engineering, Vol. 3, No. 24 (Feb. 1931), London, pp. 29-30, ills.

— Rückblick auf die Motorenschau des 12. Pariser Salons, Dezember 1930.
Zeitschr. Flugt. Motorluftsch., 22 Jahrg., 6. Heft (28 März 1931), München und Berlin, pp. 162-166, ills., diagr., tabl.

CHURCH, EARL FRANK. Methods of eliminating ground surveying for control in aerial photographic mapping. 5th of a series.
Syracuse, Syracuse University, 1931, pp. 64, diagrs.

CIERVA, JUAN DE LA. *The autogiro.*
Aeroplane, Vol. 41, No. 8 (Aug. 19, 1931), London, pp. 462-464.

CIERVA, JUAN DE LA, and DON ROSE. *Wings of tomorrow; the story of the autogiro.*
New York, Brewer, Warren & Putnam, 1931, pp. 300, ills., diagrs.

CIRCLING flight. *See* Mettam, H. A.: *Meccanica semplice del volo circolare.*

— flight. *See* Mettam, H. A.: *Simple mechanics of circling flight.*

CIRRUS engines. *See* Thompson, James G.: *Engine service and maintenance.*
Part VIII—Cirrus engines.

CIRRUS-HERMES. *See* Handasyde, G. H.: *Building light aeroplane engines.*
The design and manufacturing processes of the Cirrus-Hermes engines examined and described.

CIVIL aeronautics. *See* Schiavone, Michele: *I servizi aerei civili. Studio statistico-economico-giuridico.*

— *See* United States Department of Commerce, Aeronautics Branch: *Civil aeronautics in the United States*, July 1, 1931.

CIVIL aviation. *Legislazione aeronautica estera.* Fasc. III. Polonia (I° supplemento). Fasc. V. Belgio (I° supplemento): Fasc. VIII. Impero Britannico (I° supplemento. Gran Bretagna). Fasc. X. Grecia. Fasc. XI. Stati Uniti di America. Fasc. XII. Austria. (Ministero dell'aeronautica; aviazione civile e traffico aereo).
Roma, Istit. poligraf. dello Stato edit. tip., 1931, 6 voll, pp. vii, 25-143; 31-51; 86-149; 23; 75; 104.

— On the direction of civil aviation.
Aeroplane, Vol. 40, No. 1 (Jan. 7, 1931), London, pp. 1-2, 4, ills.

— *Statistica delle linee aeree civili italiane, anno 1930*, IX (Ministero dell'aeronautica; aviazione civile e traffico aereo).
Roma, Istituto poligr. Stato, Libreria edit. tip., 1931, pp. 326, ills.

— *See* Egypt: *Civil aviation in Egypt.*

— *See* Lamont, Robert: *Glancing back at 1930. Civil aviation progress.*

— *See* Van Zandt, J. Parker: *Subsidizing civil aviation in Europe and America.*

CLARK. *See* Alston, R. P.: *Maximum lift coefficient of "Starling" with Clark YH wings.*

CLARK, K. W., and W. G. JENNINGS. *Full scale determination of the motion of an Avro aeroplane when stalled.*
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 832-837.
diagrs. Rep. Mem. No. 1263. (Ae. 412.)

CLARK, K. W. *The motions, at the stall, of a Bristol fighter aeroplane with slot and aileron control on both planes.*
Aer. Res. Comm., Rep. Mem., No. 1341 (Ae. 473-T. 2971), May 1930, London, 1931, pp. 7, diagrs., tabl.

CLARK, K. W., and B. LOCKSPEISER. *Wind tunnel tests on aerofoils at negative incidences.*
Aer. Res. Comm., Rep. Mem., No. 1383 (Ae. 508-T. 3083), December 1930, London, 1931, pp. 8, diagrs., tabls.

54 NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

CLARK, K. W. *See* Bradfield, F. B., K. W. Clark, and R. A. Fairthorne: Maximum lift in closed and open jet tunnels.

— *See* Jones, E. T., and K. W. Clark: Full scale maximum lift coefficient of R.A.F. 28 section wing.

CLAUDY, CARL HARRY. Prize winners' book of model airplanes. Indianapolis, The Bobbs-Merrill Company, 1931, pp. 242, ills., plans.

CLAXTON, BROOKE. Legislative control of radio in Canada. *Air Law Review*, Vol. 2, No. 4 (Nov. 1931), New York, pp. 439-454.

CLAY, WILLIAM C. *See* Theodorsen, Theodore and William C. Clay: Ice prevention on aircraft by means of engine exhaust heat and a technical study of heat transmission from a Clark Y airfoil.

— *See* Theodorsen, Theodore, and William C. Clay: The prevention of ice formation on gasoline tank vents.

CLEARY, CHARLES J. Fabrics in aviation. The characteristics and methods of testing of various textile materials examined and explained. *Aircraft Engineering*, Vol. 3, No. 31 (Sept. 1931), London, pp. 228-229, 232, diagrs.

CLEMENTS, N. V. The show's the thing. *U.S. Air Services*, Vol. 16, No. 3 (March 1931), Washington, pp. 32-34, ill.

CLEPHANE, DOUGLAS W. Light planes and 1931. *Airway Age*, Vol. 12, No. 4 (Apr. 1931), New York, pp. 370-372.

— Selling the business plane. *Aviation*, Vol. 30, No. 10 (Oct. 1931), New York, pp. 588-590, ills.

CLERMONT-FERRAND. The Clermont-Ferrand meeting. *Flight*, No. 1177, Vol. 23, No. 29 (July 17, 1931), London, pp. 697-698, ills.

CLEVELAND. Die grossen amerikanische Luftspiele in Cleveland. "National air Races 1931". *Luftschau*, 4. Jahrg., Nr. 19 (10. Okt. 1931), Berlin, pp. 75-76, ill.

— National Races go to Cleveland. *Western Flying*, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Cal, p. 34.

— *See* National Air Races.

— *See* National Air Races: National Air Races at Cleveland this month.

CLOTHIER, W. C. Carburetter fuel metering characteristics. *Aer. Res. Comm., Rep. Mem.*, No. 1361 (E. 43-I.C.E. 761, 790), December 1930, London, 1931, pp. 12, ills., diagrs.

CLOUD hopping. *See* Schempp, Martin: Cloud hopping in soaring flight.

CLOVER, WILLIS H. The weather and the pilot. *Western Flying*, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Cal., pp. 32-35, ill., map.

CLUBS. *See* Holme, John C.: Aviation clubs in the colleges.

COALES, J. D. The range of aircraft. The effect of specific weight of power unit with special reference to Diesel engines. *Aircraft Engineering*, Vol. 3, No. 25 (March 1931), London, pp. 61-62, diagr., tabl.

COBHAM, ALAN. Twenty-thousand miles in a flying-boat; my flight round Africa. London, Calcutta and Sydney, George Harrap and Co., 1931, pp. 250.

COCHERCANO, JEAN. Note sur le vol en piqué des avions.
L'Aérophile, 39e année, No. 3 (15 mars 1931), Paris, pp. 80-82, diagrs.

COCHRAN-PATRICK, C. K. Aerial reconnaissance mapping in northern Rhodesia.
Geographical Review, Vol. 31, 1931, New York, pp. 213-220.

COCK, J. J. Het vliegveld "West Schouwen"
Het Vliegveld, 15de Jaarg., No. 12 (Dec. 1931), Amsterdam, pp. 416-417, ills.

COCKBURN, GEORGE BERTRAM. On a British pioneer.
Aeroplane, Vol. 40, No. 9 (March 4, 1931), London, pp. 353-354.

COCKPIT EQUIPMENT. The brain centre of a modern aircraft. Cockpit equipment of the "Balair" Fokkers.
Flight, No. 1151, Vol. 23, No. 3 (Jan. 16, 1931), London, p. 49, ill.

COFFIN, HAROLD. Wings for Hawaii.
Nat. Aer. Mag., Vol. 9, No. 9 (Sept. 1931), Washington, pp. 9-12, ills.

COGLIOLO, PIETRO. Codice aeronautico, con appendici di aggiornamento a tutto il 1930.
Milano, U. Hoepli, 1931, pp. vii, 733. Seconda edizione.
Congressi e conferenze internazionali, bibliografie, riviste, corsi di diritto aereo. Diritto aeronautico con speciale riguardo alla legge italiana.
Legislazione italiana. Convenzione di Parigi 13 ottobre 1919. Leggi straniere. Materiale per una convenzione internazionale di diritto aereo privato.

COLBY, THOMAS B. Troubles with dope. How to prevent them.
Western Flying, Vol. 10, No. 5 (Nov. 1931), Los Angeles, Cal., pp. 26-28, port.

COLEGROVE, KENNETH. The international aviation policy of the United States.
Journal of Air Law, Vol. 2, No. 4 (Oct. 1931), Chicago, pp. 447-473.

— A survey of international aviation.
Journal of Air Law, Vol. 2, No. 1 (Jan. 1931), Chicago, pp. 1-23.

COLEGROVE, KENNETH W. International control of aviation.
Boston, World peace Foundation, 1930, pp. 234.

COLLAR, A. R. See Lock, C. N. H., and A. R. Collar: Exploration of the flow near the screw proposed for the N.P.L. compressed air tunnel.

— See Williams, D. H., and A. R. Collar: Motion of H.M.A. R. 101 under certain assumed conditions.

COLLINS. Collins aircraft annual.
London, Collins, 1931.

COLLINS, A. R. A formula for the bouyancy of the wing floats of flying boats and single float seaplanes.
Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1178, Vol. 23, No. 30 (July 24, 1931), London, pp. 726g-726h, (55-56), ill.

COLLINS, PAUL F. Some points for economic operation.
Airway Age, Vol. 13, No. 14 (Oct. 3, 1931), New York, pp. 264-266.

COLORS. See Fombeure, G.: L'altération du sens des couleurs.

COLUMBA, FAUSTO. L'elica a passo variabile.
Riv. Aer., Anno 7, N. 2 (feb. 1931), Roma, pp. 282, diagrs.

COLUMBIA. The Columbia Gorge.
Western Flying, Vol. 10, No. 1 (July 1931), Los Angeles, Cal., p. 71.

COMBUSTION. See Schnauffer, Kurt: Untersuchung von Verbrennungsvorgängen in Zündmotoren mittels elektrischer Nessverfahren.

COMITÉ FRANÇAIS DE PROPAGANDE AÉRONAUTIQUE. Notice descriptive des appareils, primés au concours pour l'amélioration de la sécurité des groupes motopropulseurs d'aéronautique, organisé par le C.F.P.Aé. avec l'appui du Ministère de l'Air.

Paris, Comité Français de Propagande Aéronautique, 1931, pp. 48, ills., diagrs.

COMMERCE, DEPARTMENT OF. *See* United States Department of Commerce.

COMMERCIAL aeronautics. Aeronautical finance.

Aviation, Vol. 30, No. 3 (March 1931), New York, pp. 163-164, diagrs.

— Foreign trade.

Aviation, Vol. 30, No. 3 (March 1931), New York, pp. 168-170, diagrs., tabls.

— Massnahmen zum Steigern der Reisegeschwindigkeit im Luftverkehr.
Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 44 (Okt. 1931), Berlin, p. 1364.

— The non-professional market.

Aviation, Vol. 30, No. 6 (June 1931), New York, pp. 350-352.

— Nonstop pickup and delivery of mail and express by airplane.
U.S. Air Services, Vol. 16, No. 10 (Oct. 1931), Washington, pp. 27-28.

— Pan American grows.

Airway Age, Vol. 12, No. 10 (June 6, 1931), New York, pp. 568-571, ills.

— Position vraie de l'industrie aéronautique dans le monde.
L'Aéronautique, 13me année, No. 148 (Sept. 1931), Paris, p. 310, diagrs.

— Production and licensing.

Aviation, Vol. 30, No. 3 (March 1931), New York, pp. 136-150, diagrs., tabls.

— Le statut de l'aviation marchande.

L'Aérophile, 39e année, No. 8 (15 août 1931), Paris, p. 231.

— *See* Abrams, Monte C.: Air express possibilities on the United States.

— *See* Bonifacio, F.: Aspetti tecnici, economici e politici del traffico aereo.

— *See* Bowen, R. Sidney, Jr.: Trends of the industry during 1930.

— *See* Bree, J. de: Het Jumbo-vrachtvliegtuig der K.L.M.

— *See* Central America: Air transport in Central America.

— *See* Clephane, Douglas W.: Selling the business plane.

— *See* Courtney, Frank T.: Flying versus transportation.

— *See* Dalissier, Alexis: Les transports aériens; étude économique; preface de Laurent Eynac.

— *See* Davidson, Walter V.: The business of flying for business.

— *See* Deutsche Luft Hansa a.g.: Der luftfrachtverkehr; ein merkbuch für den eilversand.

— *See* Earhart, Amelia: Putting air travel into mass production.

— *See* Egypt: A flight into Egypt.

— *See* Erickson, Ed. L., and Walter B. Hawkins: Reduced-rate aircraft merchandising.

— *See* France: Tendenze attuali dell' aviazione commerciale in Francia.

— *See* Gassner, A. A.: Transport planes for profit.

COMMERCIAL aeronautics. *See* Hayes, Robert: *New use for planes*.

- *See* International American Conference: Commercial aviation. Convention between the United States of America and other American republics. Signed at Habana, February 20, 1928.
- *See* Irwin, R. Randall: The problem of distribution.
- *See* Knauth, Arnold, W.: Federal airship foreign commerce bill.
- *See* Lake, Harley W.: Merchandising airport service.
- *See* Landis, William B.: The airplane in business.
- *See* Latchford, Stephen: Habana convention on commercial aviation.
- *See* Lawrance, Charles L.: Air transport. The air mail service—Its development and cost.
- *See* Lawrance, Charles L.: Air transport. What it means to the manufacturer.
- *See* MacGregor, John D.: Development of Inter-American air transport.
- *See* Meyer, Willy: *Verkehrsflieger berichten*.
- *See* Moodie, Edmund L.: Reaching a private market with flying clubs.
- *See* Muller, Charles G.: Uses of aircraft in industry.
- *See* New York State: Laws affecting aviation of the State of New York. Published by the New York State Commission on Aviation.
- *See* Osswald, Emmy: *Zur rationalisierung der innerdeutschen handelsluftfahrt*.
- *See* Peru: Commercial aviation in Peru.
- *See* Pritchard, Robert J.: Plane brokers.
- *See* Reid, Andrew: Merchandising needs.
- *See* Rohlfing, Charles Carroll: National regulation of aeronautics.
- *See* Savage, E. W.: Production and sales.
- *See* Sbernadori, Paolo: Commercial aviation in Italy.
- *See* Schenk, Heinz: *Finanzierung und Organisation des Luftverkehrs*.
- *See* Smith, Wesley Leland: Air transport operation.
- *See* Stapp, James Adair: Public altitude flights make busy airports.
- *See* Stewart, A. T.: Regional aviation conferences.
- *See* Trumbull, John H.: Meeting the challenge for sound cargo and passenger air transport service.
- *See* Wines, James P.: Selling air transport.
- *See* Woods, Ralph L.: The spreading wings of aviation means greater sales.
- *See* Woods, Ralph L.: Unusual uses of airplanes.

COMMERCIAL aeronautics. *See* Wynne, John S.: Mercantile aviation.

— *See* Young, Clarence M.: Scheduled air transportation today is a sound business endeavor.

COMPASSES. Deux nouvelles boussoles. Le télécompas Askania a transmission pneumatique. Le compas magnétique aéra 6 N B.

L'Aéronautique, 13me année, No. 147 (août 1931), Paris, pp. 303-304, illus.

— *See* Potter, Leslie S.: Compass swinging afloat.

— *See* Potter, Leslie S.: Compasses and their care.

— *See* Ramsey, Logan C.: The pilot and his aircraft compass.

— *See* Ramsey, Logan C.: The pilot and the compass error.

CONDENSERS. *See* Muttray, H.: Widerstand und Kühlwirkung eines Flugzeuggrumpfes mit verschiedenen angeordnetem Kühler.

CONGO. *See* Crocker, H. E.: Air transport. A flying trip to the Belgian Congo.

CONGRÈS INTERNATIONAL DE LÉGISLATION AÉRIENNE. Neuvième Congrès international de législation aérienne du Comité Juridique international de l'Aviation, tenu à Budapest du 29 septembre au 3 octobre 1930.

Paris, Les Éditions Internationales, 1931, pp. 236.

9th Budapest, 1930.

CONGRÈS INTERNATIONAL DE LA NAVIGATION AÉRIENNE. Cinquième Congrès International de la Navigation Aérienne. Organisé sous les auspices du Gouvernement Néerlandais par l'Aéro-Club Royal des Pays-bas. La Haye, 1-6 septembre 1930.

La Haye, Martinus Nijhoff, 1931, Tome premier, pp. 874; Tome second, pp. 875-1741.

— Les communications techniques faites au Ve Congrès de la Haye.

L'Aéronautique, 13me année, No. 141, *Bulletin L'Aérotechnique*, 9e année, No. 98 (fév. 1931 Paris, p. 59.

CONGRÈS INTERNATIONAL DE LA SÉCURITÉ AÉRIENNE. Le premier Congrès international de la Sécurité aérienne.

L'Aérophile, 39e année, No. 1 (15 jan. 1931), Paris, pp. 3-6, illus.

CONGRÈS NATIONAL DE L'AÉRONAUTIQUE COLONIALE. Le congrès de l'aéronautique coloniale et l'aviation marchande internationale.

L'Aéronautique, 13me année, No. 150 (nov. 1931), Paris, p. 374.

— Le congrès national d'aéronautique coloniale 5-10 octobre 1931.

L'Aérophile, 39e année, No. 11 (15 nov. 1931), Paris, pp. 323-325, illus.

CONGRESSES. *See* Betaz, Baur de: Einiges über internationale Luftfahrtorganisationen und Konferenzen.

— *See* Caspari, W.: Ergebnisse des internationalen Kongresses für Flugsicherheit.

— *See* Piercy, N.A.V.: The fifth air congress. The report of the papers read and discussions during the proceedings at the Hague.

— *See* Stockholm: Der dritte internationale Kongress für technische Mechanik Stockholm 1930.

— *See* Stockholm: Den första internationella säkerhets-kongressen.

CONNECTICUT. Connecticut laws governing aeronautics. Revised to July 1, 1931. Office of Commissioner of Aeronautics, Hartford.
Hartford, Service Press, inc., 1931, pp. 41.

— *See* Becker, Paul: Connecticut—an aviation leader. Rapid progress made under state aeronautics department.

CONNOR, HARRY P. Crossing the North Atlantic.

Airway Age, Vol. 12, No. 10 (Jun. 6, 1931), New York, pp. 560-564, map.

CONSTANTIN. *See* Automatic stability: Deux dispositifs de stabilisation automatique. Le dispositif de stabilité par gyroscopes Marmonnier. Les girouettes de stabilisation Constantin.

CONSTANTIN, L. Une possibilité d'augmentation de la charge payante de certains hydravions.

L'Aéronautique, 13^{me} année, No. 146, Bulletin L'Aérotechnique, 9^e année, No. 103 (juil. 1931) Paris, p. 253.

CONSTRUCTION. *See* Brenner, Paul: Baustofffragen bei der Konstruktion von Flugzeugen.

— *See* Cassens, J.: Gewichtsermittlung der wichtigsten einfachen Träger.

— *See* Coombes, L. P., and A. S. Crouch: The accelerations of a Fairey "Flycatcher" seaplane during aerobatic manœuvres.

— *See* Ebner, Hans: Die Berechnung regelmässiger, vielfach statisch unbestimmter Raumfachwerke mit Hilfe von Differenzengleichungen.

— *See* Gerard, I. J.: The primary importance of mechanical testing in aircraft construction.

— *See* Glauert, H.: Some generalised curves for the accelerated motion of an aeroplane.

— *See* Handasyde, G. H.: Light aeroplane production. A critical description of the De Havilland works and Moth construction.

— *See* Hardecker, John F.: The interior decorator has his day.

— *See* Herman, H.: Relative economy of different methods of airplane construction.

— *See* Hertel, Heinrich: Dynamische Bruchversuche mit Flugzeugbauteilen.

— *See* Hertel, Heinrich: Die Verdrehsteifigkeit und Verdrehfestigkeit von Flugzeugbauteilen.

— *See* Horn, Hans A., und Karl Tewes: Die Schweißung von Elektron-metall im Flugzeugbau.

— *See* Lössl, E. v.: Der Einfluss des Holmgewichtes auf die Bauspannweite und die Flugleistungen von Grossflugzeugen.

— *See* Minelli, Carlo: Moderni problemi sulle strutture aeronautiche.

— *See* Mono-Spar: An interesting experiment.

— *See* Rechtlich, Arved: Grundlagen für die konstruktive Anwendung und Ausführung von Stahlrohrschweissungen im Flugzeugbau.

CONSTRUCTION. *See* Seydel, Edgar: Beitrag zum Gewichtsvergleich zwischen dreigurtigem und viergurtigem Flechtwerk.

— *See* Seydel, Edgar: Beitrag zur Berechnung viergurtiger Flechtwerke.

— *See* Silva, Camillo: La tecnica costruttiva degli aeroplani.

— *See* Teichmann, Alfred: Das räumliche Knicken einiger Stabverbindungen des Flugzeubaus.

— *See* Trayer, George W., and H. W. March: Elastic instability of members having sections common in aircraft construction.

— *See* Trigona della Floresta, Ercole: Problemi strutturali nella costruzione degli aeroplani giganti.

— *See* Younger, John Elliott, and Nairne F. Ward: Airplane construction and repair; a textbook for airplane mechanics . . . with chapters on heat treatment and welding.

CONTINENTAL. Continental A40 engine.

Aero Digest, Vol. 18, No. 2 (Feb. 1931), New York, p. 72.

CONTROL. Control beyond the stall.

Flight, No. 1200, Vol. 23, No. 52 (Dec. 25, 1931), London, pp. 1268-1270, ills.

— Control by conventional ailerons. Results of a series of wind-tunnel experiments carried out by the U.S. Bureau of Standards.

Aircraft Engineering, Vol. 3, No. 34 (Dec. 1931), London, pp. 315-318, diagrs., tabls.

— A relief gear for the pilot. A device for reducing the load on the controls by permanently off-setting the rudder.

Aircraft Engineering, Vol. 3, No. 34 (Dec. 1931), London, pp. 313-314, ills.

— *See* Alston, R. P.: Stalled flight tests on a Bristol fighter fitted with auto control slots and interceptors.

— *See* Bernardi, Mario de: Single unit control.

— *See* Bradfield, F. B.: Centre of pressure travel of symmetrical section at small incidence.

— *See* Bradfield, F. B.: Maximum lift coefficient of R.A.F. 30 all-moving rudder.

— *See* Clark, K. W., and W. G. Jennings: Full scale determination of the motion of an Avro aeroplane when stalled.

— *See* Cushing, R. K.: Controllability at low speeds and full scale measurements of lift and drag of Parnall "Peto" fitted with R.A.F. 31 section wings. (Slotted and unslotted.)

— *See* Hartshorn, A. S.: The application of the Servo principle to aileron operation.

— *See* Hartshorn, A. S.: Theoretical relationship for a wing with unbalanced ailerons.

— *See* Howell, A. J.: Ears your own control.

— *See* Irving, H. B., and A. S. Batson: Some early model experiments on devices for improving lateral control near the stall.

CONTROL. *See* Jennings, W. G.: Experiments in lateral control. An account of tests with autoslots and interceptor and spoiling devices on the same aircraft.

- *See* Jennings, W. G.: Tests of various controls fitted to a Siskin aircraft.
- *See* Jones, B. Melvill, and C. E. Maitland: Records of the lateral motions of a stalled Bristol fighter aeroplane with slots upon the upper wing tips. Experiments made in the Cambridge University Air Squadron.
- *See* Jones, E. T.: Flight tests on an Atlas fitted with automatic slots connected with the ailerons and some data relevant to the design of autoslots for R.A.F. 28 section wing.
- *See* Jones, E. T., and C. E. Maitland: Stalled flight tests of a Moth fitted with auto control slots and interceptors.
- *See* Scott-Hall, S.: Experiments on an Ape aeroplane fitted with pilot planes.
- *See* Stevens, H. L.: Testing aeroplane controls.
- *See* Townend, H. C. H.: A study of slots, rings and boundary layer control by blowing.
- *See* Trigona della Floresta, Ercole: Considerazioni sul comando degli aeroplani ad ala deformabile in relazione al centramento.
- *See* Zahm, Albert Francis: Alexander Goupin, inventor of three-torque airplane control.

CONVENTIONS. *See* Caccopardo, Salvatore: The collective aeronautical conventions and the possibility of their unification.

COOLING. *See* Muttray, H.: Widerstand und Kühlwirkung eines Flugzeugrumpfes mit verschiedenen angeordnetem Kühler.

- *See* Nutt, Arthur: The cooling of engines.
- *See* Sales: Suggestions pour le refroidissement des moteurs par circulation d'eau.
- *See* Scheubel, F. N.: Über den Lüftwiderstand luftgekühlter Sternmotoren.
- *See* Swan, Andrew: Recent developments in engine cooling.
- *See* Weidinger, Hanns: Liquid cooling of aircraft engines.
- *See* Weidinger, Hanns: Versuche mit Heisskühlung am Flugmotor.
- *See* Wollé, Georg: Die Kalteanlage der DVL.

COOMBES, L. P., and A. S. CROUCH. The accelerations of a Fairey "Flycatcher" seaplane during aerobatic manœuvres.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 662-665, ill., diagrs. Rep. Mem. No. 1288. (Ae. 437.)

COOMBES, L. P., and R. K. CUSHING. Lift and drag of Blackburn "Iris." Aer. Res. Comm., Rep. Mem., No. 1354, (Ae. 485-T. 2810), May 1929, London, 1931, pp. 5, ill., diagrs., tabs.

COOMBES, L. P. Notes on the Schneider Cup race of 1927.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 353-372, tabls. M.A.E.E. Report No. F A 68.

— See Garner, H. M., and L. P. Coombes: The determination of the water resistance of seaplanes.

COONTZ, JOHN L. Echo conquers fog for flyers.

The Sunday Star (Magazine), Jan. 25, 1931, Washington, pp. 14, 20, ills.

COOPER, HAROLD J. How flying performance determines the proper physical standards for pilots.

National Aeronautic Magazine, Vol. 9, No. 1 (Jan. 1931), Washington, pp. 45-49, ills.

COOPER, JOHN COBB, Jr. Rules of aircraft liability in the proposed Federal merchant airship act.

Air Law Review, Vol. 2, No. 3 (July 1931), New York, pp. 327-348.

Brattleboro, Vt., 1931, pp. 327-348. Reprinted from Air Law Review, official journal of the American Academy of Air Law and the American Section of the International Committee on Radio, Vol. II, No. 3.

COOPER, MABEL C. The airlines of Mexico.

Aero Digest, Vol. 18, No. 2 (Feb. 1931), New York, pp. 86, 148, ill.

— Airports of Mexico.

U.S. Air Services, Vol. 16, No. 2 (Feb. 1931), Washington, pp. 41-42.

— An early bird goes to Paris.

U.S. Air Services, Vol. 16, No. 9 (Sept. 1931), Washington, pp. 21-24, ills.

COOPER, W. C. See Kerr, P. S.: Fuel flowmeters designed to measure mass flow.

COPE, W. F. Heat transmission between surfaces and fluids flowing over them.

(1) The case of two-dimensional flow.

Aer. Res. Comm., Rep. Mem., No. 1359 (Ae. 490-T. 3017), October 1930, London, 1931, pp. 8, ill., diagr., tabls.

COPPELLOTTI, CELESTINO. Designazione dei bersagli e fotografie dall'aeroplano.

Riv. Aer., Anno 7, n. 12 (dic. 1931) Roma, pp. 466-480, ills.

— Fotografie dall'aeroplano: la scala e l'orientamento.

Riv. Aer., Anno 7, n. 7 (luglio 1931), Roma, pp. 5-15, ills.

CORROSION. Corrosion tests in Germany. Tentative standard methods laid down by the Aluminium Board of the Reichsausschuss für Metallenschutz. Translated by Georg Goldbach.

Aircraft Engineering, Vol. 3, No. 30 (Aug. 1931), London, pp. 195-196, ill., diagrs.

— Protection against corrosion.

Aeroplane, Vol. 41, No. 17 (Oct. 21, 1931), London, pp. 980-982.

— See Abraham, Martin: Korrosionsversuche an Verspannungs-Drahtlitzen mit verschiedenartigen Endverbindungen.

— See Binnie, A. M.: The influence of oxygen on corrosion fatigue.

— See Brenner, Paul: Ergebnisse von Korrosions und Oberflächenschutzversuchen mit Aluminium-Walzlegierungen.

— See Brenner, Paul: Korrosionsversuche mit Duralplat-Nietverbindungen.

— See Gamboli, Mario: Apparecchi per prove pratiche di corrosione dei metalli.

CORROSION. *See* Guidi, G.: *La corrosione dei materiali impiegati nelle costruzioni aeronautiche.*

— *See* Guzzoni, G., e E. Nardi: *La corrosione dei metalli e leghe usati in aeronautica.*

— *See* Schmidt, Erich K. O.: *Einfluss von Kochsalzlösungen verschiedener Konzentration auf den Verlauf des Korrosionsangriffs im Wechseltauchversuch.*

— *See* Schmidt, Erich K. O.: *Korrosion durch Potentialunterschiede und ihre Verhütung.*

— *See* Schmidt, Erich K. O.: *Seewasserbeständigkeit galvanischer Überzüge auf Eisen und Leichtmetallen.*

— *See* Schmidt, Erich K. O.: *Verfahren der Korrosionsprüfung.*

— *See* Sullivan, James E.: *Corrosion of duralumin rivets.*

— *See* Sutton, H., and L. F. Le Brocq: *The protection of magnesium alloys against corrosion.*

CORRUGATED plates. *See* Seydel, Edgar: *Schubknickvesuche mit Wellblechtafeln.*

COSCI, DOMENICO. *Manuale del motorista d'aviazione.* (Ministero dell' aeronautica).

Roma, Istituto poligr. Stato, Libreria, 1931, pp. vi, 550, ills.

COST, R. W. *Hangar lighting and safety.*

Aviation, Vol. 30, No. 6 (June 1931), New York, pp. 353-354, ills.

— *Minimizing fire hazards in airplane hangars.*

Airway Age, Vol. 13, No. 1 (July 4, 1931), New York, p. 51.

COSTANZI, GIULIO. *Il problema del lubrificante nazionale per i motori a scoppio e la coltivazione del ricino in Italia.*

Riv. Aer., Anno 7, N. 9 (Sett. 1931), Roma, pp. 403-410.

COSTS. *See* Lederer, Jerome: *What it costs to operate a business plane.*

COTTON, F. T. *See* Fenning, R. W., and F. T. Cotton: *Experiments on the ignition of gases by sudden compression.*

COURTNEY, FRANK T. *Flying versus transportation.*

Aviation, Vol. 30, No. 7 (July 1931), New York, pp. 417-420.

— *Speed in air transport.*

Aero Digest, Vol. 19, No. 6 (Dec. 1931), New York, pp. 28, 100.

— *Trans-Atlantic air mail.*

Aero Digest, Vol. 19, No. 2 (Aug. 1931), New York, pp. 39, 119.

COWLEY, W. L., and SYLVIA W. SKAN. *A simplified analysis of the stability of aeroplanes.*

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 786-798.
Rep. Mem. No. 1333. (Ae. 465.)

— *A study of polynomial equations.*

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 799-818,
tabl. Rep. Mem. No. 1325. (Ae. 459.)

COWLEY, W. L., and R. WARDEN. Tests of quarter scale models of high speed seaplanes for the Schneider Trophy Contest of 1927. Introduction and Section I. Tests on the Supermarine S. 5 models.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 17-78, ills., diagrs., tabls. Reports and Memoranda No. 1296 (Ae. 430).

— Tests of quarter scale models of high speed seaplanes for the Schneider trophy contest of 1927. Section II. Tests on the Gloster IV models.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 81-130, ills., diagrs., tabls. Reports and Memoranda No. 1297 (Ae. 431).

— Tests on quarter scale models of high speed seaplanes for the Schneider Trophy Contest of 1927. Section III. Tests on the Crusader models.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, pp. 131-167, ills., diagrs., tabls. Reports and Memoranda No. 1298 (Ae. 432).

— Tests on quarter scale models of high speed seaplanes for the Schneider Trophy Contest of 1927. Section IV. Comparison with full scale and conclusions.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, pp. 168-199, diagrs., tabls. Reports and Memoranda No. 1299 (Ae. 433).

COWLEY, W. L. *See* Aeronautical Research Committee; Collected reports on British high speed aircraft for the 1927 Schneider Trophy contest.

COWLING. Effect of ring type engine cowls on model of Douglas XO-14. Five-foot wind tunnel test No. 35.

Air Corps Information Circular, Vol. 7, No. 659 (April 1, 1931), Washington, United States Government Printing Office, 1931, pp. 5, ill., diagrs., tabls. Air Corps Technical Report No. 3353.

— *See* Engel, John H.: Rings—How to install them.

— *See* Rings.

— *See* Townend, H. C. H.: Reduction of drag of radial engines by the attachment of rings of aerofoil section, including interference experiments of an allied nature, with some further applications.

Cox, H. L. *See* Gough, H. J., and H. L. Cox: The behaviour of a single crystal of antimony subjected to alternating torsional stresses.

— *See* Gough, H. J., and H. L. Cox: Further experiments on the behaviour of single crystals of zinc subjected to alternating torsional stresses.

— *See* Gough, H. J., and H. L. Cox: Mode of deformation of a single crystal of silver.

Cox, WILLIAM M. Aviation. Book one.

New York, Haaren High School, 1931.

CRAM, RALPH W. I remember—Seven National Air Tours.

U.S. Air Services, Vol. 16, No. 12 (Dec. 1931), Washington, D.C., pp. 31-33.

— 1931 National Air Tour.

Aero Digest, Vol. 19, No. 2 (Aug. 1931), New York, pp. 42, 121.

CRANKSHAFTS. Torsional vibration of crankshafts. A description of the R. A. E. MK. III torsiograph.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1118-1122, ills. Rep. Mem. No. 1248. (E. 32.)

— *See* Carter, B. C., and N. S. Muir: Torsional vibration of crankshafts. Beardmore "Torando" airship engine investigations.

CRANKSHAFTS. *See* Lake, E. F.: Aircraft engine crankshaft.

— *See* Taylor, E. S.: Bearing loads on radial-engine crankshafts.

CRANWELL. Regulations for admission to the Royal Air Force College, Cranwell . . . This edition cancels all previous issues. 11th ed. May 1931. London, His Majesty's Stationery Office, 1931, pp. 58, tabs. (Air publication 121.)

CRAUSSE, E., et J. BAUBIAC. Sur l'application d'une méthode d'enregistrement à l'étude des tourbillons se produisant dans les liquides.

C. R. Acad. Sci., T. 192, No. 22 (1er juin 1931), Paris, pp. 1355-1357, diagrs.

— Sur les tourbillons secondaires se produisant à l'aval d'un obstacle immergé dans un liquide.

C. R. Acad. Sci., T. 192, No. 24 (15 juin 1931), Paris, pp. 1529-1531, ill., diagrs.

CREMONA, CESARE. Diagramma logaritmico per la determinazione delle ΔC e $\Delta \alpha$ per le variazioni dell'allungamento dei profili alari monoplani.

L'Aerotecnica, Vol. 11, No. 9 (Sett. 1931), Roma, pp. 1119-1125, diagrs. Abstract in English, p. 1169.

CROCCO, GAETANO ARTURO. Elementi di aviazione. I. (Auspice l'Ente nazionale fascista di cultura).

Roma, A. Stock (Grafia, s.a.i. ind. grafiche), 1931, pp. 614.
Collana scientifica, sezione tecnica, II.

— Iperaviazione e superaviazione. (Conferenza tenuta al Congresso delle Scienze il 15 settembre 1931).

Riv. Aer., Anno 7, N. 10 (ott. 1931), Roma, pp. 1-33, ills., diagrs.

— Iperaviazioni e superaviazione. Seguono due note in appendice: Sui corpi a resistenza negativa; sui corpi aerotermodynamici portanti.

L'Aerotecnica, Vol. 11, No. 10 (ott. 1931), Roma, pp. 1173-1220, ill., diagrs. Abstract in English pp. 1336-1337.

— "L'Aerotecnica". Notiziario tecnico del Ministero dell'Aeronautica e Atti dell'Associazione Italiana di Aerotecnica.

L'Aerotecnica, Vol. 11, N. 1 (gen. 1931), Roma, p. 3.

— Problemi aeronautici. Dagli albori fino alla guerra.

Roma, A. Stock (Grafia, s.a.i. ind. grafiche), 1931, pp. 524, ill.

— Sui corpi aerotermodynamici portanti.

Rendiconti della sedute della Reale Accademia Nazionale dei Lincei. Classe di Scienze Fisiche, Matematiche e Naturali (Atti, Anno 328, 1931 (IX)). Vol. 14, Fasc. 5-6, Roma, 1931, pp. 161-166.

CROCKER, H. E. Air transport. A flying trip to the Belgian Congo.

Flight, No. 1175, Vol. 23, No. 27 (July 3, 1931), London, pp. 646-647, ill., map.

CROUCH, A. S. Measurement of lift and drag of Southampton seaplane.

Aer. Res. Comm., Rep. Mem., No. 1391 (Ae. 512-S. 73), April 1931, London, 1931, pp. 3, ill., diagrs., tabs.

— *See* Coombes, L. P., and A. S. Crouch: The accelerations of a Fairey "Flycatcher" seaplane during aerobatic manœuvres.

CROWDUS, WALTER C. Aviation insurance.

Journal of Air law, Vol. 2, No. 2 (April 1931), Chicago, pp. 176-192.

CROYDON. Night flying at Croydon.

Flight, No. 1185, Vol. 23, No. 37 (Sept. 11, 1931), London, pp. 925-926, ills.

CRUSADER. "Crusader" aircraft. Single-seater high-speed float seaplane. Contract No. A.M. 674206 26. Specification No. 7 26. Engine "Bristol Mercury." Specially designed, 800 B.H.P. Constructional report. Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 320-324, illus.

— Test of sections of fuselage of Short Crusader. Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 336-337.

— See Brafield, F. B., and H. Davies: Wind tunnel tests of model of "Crusader."

— See Carter W. G.: Notes and comments on the design of "The Crusader." Part I.

— See Cowley, W. L., and R. Warden: Tests on quarter scale models of high speed seaplanes for the Schneider Trophy Contest of 1927. Section III. Tests on the Crusader models.

CUBA. See Vest, J. R. W.: Charting Cuba's coastline from the sky.

CURRY, MANFRED. Sails and aerodynamics. Flight, No. 1167, Vol. 23, No. 19 (May 8, 1931), London, p. 408.

CURTISS. The Curtiss "Kingbird." An American twin-engined cabin transport. Flight, No. 1150, Vol. 23, No. 2 (Jan. 9, 1931), London, pp. 29-30, illus.

— The new Curtiss wind tunnel. Curtiss-Wright Review, Vol. 2, No. 3 (July 1931), New York, p. 11, ill.

CURTISS AEROPLANE AND MOTOR CO., INC. Handbook of instructions for the assembly and maintenance with parts catalog of the O-1G & O-39 Falcon airplane Buffalo, Curtiss Aeroplane and Motor Co., inc., Oct. 1931, pp. 140, illus., diagrs., tabls.

CURTISS-WRIGHT CORPORATION. See Allen, C. B.: Curtiss moves to Buffalo.

CURVILINEAR flight. See Kruse, Helmuth: A study of curvilinear flight.

CUSHING, R. K. Controllability at low speeds and full scale measurements of lift and drag of Parnall "Peto" fitted with R.A.F. 31 section wings (Slotted and unslotted). Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 895-905, illus., diagrs., tabls. Rep. Mem. No. 1320. (Ae. 456.)

— See Coombes, L. P., and R. K. Cushing: Lift and drag of Blackburn "Iris."

CUTHILL, R. W., AND H. S. HINCHMAN. History and commercial value of the airplane launching catapult. Aero Digest, Vol. 19, No. 6 (Dec. 1931), New York, pp. 40-44, 98-99, illus.

CUTTER, CHARLES N. Banking by air. Aero Digest, Vol. 18, No. 3 (March 1931), New York, p. 94, ill.

CUTTY SARK. The cruise of a "Cutty Sark." Flight, No. 1176, Vol. 23, No. 28 (July 10, 1931), London, pp. 658-660, illus., map.

CYLINDER grinding. Cylinder grinding extraordinary. Flight, No. 1161, Vol. 23, No. 13 (March 27, 1931), London, p. 268, ill.

CYLINDERS. See Atkin, E. H.: Torsion in thin cylinders.

— See Fage, A.: Drag of circular cylinders and spheres.

— See Fage, A., and V. M. Falkner: Further experiments on the flow around a circular cylinder.

CYLINDERS. *See* Green, J. J.: Breakaway of boundary layer on a cylinder and an airfoil.

— *See* Richardson, Edward Gick: Circulation round a rotating cylinder in a viscous fluid.

— *See* Richardson, Edward Gick: Flow of air adjacent to the surface of a rotating cylinder in a stream.

— *See* Thom, A.: Eddies behind a circular cylinder.

— *See* Thom, A.: Experiments on the flow past a rotating cylinder.

— *See* Thom, A.: The pressure on the front generator of a cylinder.

CZECHOSLOVAKIA. *See* Rahskopff, H.: Luftsport-Verbände in der Tschechoslowakei.

D

DLV. DLV-Zuverlässigkeitsflug 1931. Der Wettbewerb der deutschen Amateurfieger.

Luftschau, 4. Jahrg., Nr. 17, 19 (10. Sept., 10. Okt. 1931), Berlin, pp. 50-51, 73-74.

— DLV-Zuverlässigkeitsflüge.

Luftschau, 4. Jahrg., Nr. 18 (24. Sept. 1931), Berlin, p. 63.

DVL. *See* Hoff, Wilh.: Research work of the "DVL".

— *See* Seewald, Friedrich: Einige Probleme aus dem Arbeitsgebiet der Aerodynamischen Abteilung der DVL.

— *See* Stieglitz, Albert: Der DVL-Torsiograph, ein Drehschwingungs-Messgerät für Fahrzeugmotoren.

— *See* Wollé, Georg: Die Kälteanlage der DVL.

D.V.L. ZEISS. Il nuovo apparecchio "D.V.L. Zeiss" per misurazioni relative al decollo ed all'amarraggio di velivoli.

Riv. Aer., Anno 7, N. 12 (dic. 1931), Roma, pp. 572-579, illus.

DALBY, W. E. Power and the internal combustion engine.

London, Edward Arnold and Co., 1931, pp. viii, 280.

DALISSIER, ALEXIS. Les transports aériens; étude économique; préface de Laurent Eynac.

Paris, Rousseau & Cie, 1931, pp. ix, 171.

DAMON, R. S. Airplane construction production methods.

Aviation Engineering, Vol. 5, No. 4 (Nov. 1931), Washington, N.J., pp. 28-31, illus.

DANIEWSKI, WŁODZIMIERZ. *See* Morazewska, Marja, i Włodzimierz Daniewski: O oświetleniu ciemni fotograficznej.

DARNELL, T. H. The automotive ignition coil.

National Advisory Committee for Aeronautics, Report No. 374, April 20, 1931, Washington, U.S. Government Printing Office, 1931, pp. 28, illus., diagrs., tabls.

DAUGHERTY, R. A. Forestry towers as airway beacons.

Aero Digest, Vol. 19, No. 2 (Aug. 1931), New York, p. 76.

DAVIDSON, WALTER V. The business of flying for business.

Nat. Aer. Mag., Vol. 9, No. 9 (Sept. 1931), Washington, pp. 21-23, illus.

— Winter flying from Denver to Los Angeles.

Nat. Aer. Mag., Vol. 9, No. 10 (Oct. 1931), Washington, pp. 8-10, illus.

DAVIES, E. LL., and O. G. SUTTON. Some problems of modern meteorology, No. 5. The present position of the theory of turbulent motion in the atmosphere. *Quart. Journ. Roy. Met. Soc.*, Vol. 57, No. 242 (Oct. 1931), London, pp. 405-411.

DAVIES, GOMER LEWIS. Theory of design and calibration of vibrating-reed indicators for radio range beacons. *United States Bureau of Standards, Journal of Research*, Vol. 7, No. 1 (July 1931), Washington, pp. 195-213, ills., diagrs.

— See Diamond, Harry, and Gomer Lewis Davies: Characteristics of airplane antennas for radio range-beacon reception.

DAVIES, H. Tests on Gloster IVB fuselage. *Aer. Res. Comm., Rep. Mem. No. 1300*, Jan. 1931, London, pp. 210-214, ills., tabl. R.A.E Report No. B.A. 651.

— Wind tunnel test of a modified Gloster IV float. *Aer. Res. Comm., Rep. Mem. No. 1300*, Jan. 1931, London, pp. 208-209, ill., tabl. R. A. E. Report No. B. A. 610.

— See Bradfield, F. B., and H. Davies: Wind tunnel tests of model of "Crusader."

DAVIES, S. J., and E. GIFFEN. Injection, ignition and combustion in high-speed heavy-oil engines. *Journ. Roy. Aer. Soc.*, Vol. 35, No. 250 (Oct. 1931), London, pp. 928-970, diagrs.

DAVIS, A. H. Noise. *Journ. Roy. Aer. Soc.*, Vol. 35, No. 248 (Aug. 1931), London, pp. 676-710, diagrs. *Flight*, No. 1166, Vol. 23, No. 18 (May 1, 1931), London, pp. 391-393, ill.

DAVIS, H. D., and C. SPRIGG. Fly with me. *London, Hamilton, 1931*,

DAVISON, F. TRUBEE. The Air Corps. *Airway Age*, Vol. 12, No. 1 (Jan. 1931), New York, pp. 56-57.

— Glancing back at 1930. The Army air corps. *Western Flying*, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Calif., p. 41.

— More than half a million plane miles will be flown this month during Air Corps field exercises. *U.S. Air Services*, Vol. 16, No. 5 (May 1931), Washington, pp. 25-26.

— See United States Department of War: Annual report of the Assistant Secretary of War, Hon. F. Trubee Davison.

DAVY, M. J. B. Henson and Stringfellow, their work in aeronautics; the history of a stage in the development of mechanical flight, 1840-1868. *London, H. M. Stationery Office, 1931*, pp. 114, ills.

DAYHOFF, CLANCEY. Los Angeles county airport plan. *Aero Digest*, Vol. 18, No. 6 (June 1931), New York, pp. 56-58, 140, ill., map.

DAYTON ENGINEERING LABORATORIES Co. Service manual, covering the Delco system installed on the Liberty aviation engine. *Dayton, O., The Dayton Engineering Laboratories Co., 1930?*, pp. 32, ills.

DEAN, GRAHAM M. Daring wings. *New York, The Goldsmith Publishing Co., 1931*, pp. 243.

DEARBORN, C. H., and H. W. KIRSCHBAUM. Maneuverability investigation of the F6C-3 airplane with special flight instruments. *National Advisory Committee for Aeronautics, Report No. 369*, March 11, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 21, ills., diagrs., tabl.

DEARBORN, C. H., and H. W. KIRSCHBAUM. Maneuverability investigation of an F6C-4 fighting airplane.
National Advisory Committee for Aeronautics, Report No. 386, Aug. 8, 1931, Washington, U.S. Government Printing Office, 1931, pp. 25, ills., diagrs., tabls.

DEBUS, W. Mit zehn Liter Benzin von Köln zum Bodensee? Das kommende Volksflugzeug.
Die Umschau, 35. Jahrg., Heft 33 (15. Aug. 1931), Frankfurt a. M., pp. 655-657, ills.

DECHERF, E. Leforeage et le matricage des alliages légers et ultra-légers.
Aciers Spéciaux Metaux et Alliages, Vol. 6, No. 66 (fev. 1931), Paris, pp. 60-68, ills.

DECK flying. *See* Acland, W. R. D.: Deck flying.
— *See* K., A.: Deck flying.

DEEBLE. *See* French, Ned.: Deeble duplex engine.

DEFOE, GEORGE L. A comparison of the aerodynamic characteristics of three normal and three reflexed airfoils in the variable density wind tunnel.
National Advisory Committee for Aeronautics, Technical Notes No. 388, Aug. 31, 1931, Washington, August 1931, pp. 12, ills., tabls.

DEFORMATION of wings *See* Küssner, Hans Georg: Optico-photographic measurements of airplane deformations.

DE HAVILLAND. The De Havilland tiger moth.
Aeroplane, Vol. 41, No. 20 (Nov. 11, 1931), London, pp. 1131-1138, ills.

DELCO. *See* Dayton Engineering Laboratories Co.: Service manual, covering the Delco system installed on the Liberty aviation engine.

DEMING, WILLIAM C. Shattering world's records in 1931.
U.S. Air Services, Vol. 16, No. 3 (March 1931), Washington, pp. 25-28, ills.

DENMARK. Dansk Atlantflygning.
Flygning, Årg. 9, N:R 8 (Aug. 1931), Stockholm, pp. 158-160, ills.
— Instruks for bevægelige radiostationer om bord i skibe eller luftfartøjer. April 1930.
København, Trykt hos J. H. Schultz a/s, 1930, pp. 31, tabls.
Generaldirektoratet for Post- og Telegraafvaesenet.

— Kopenhagen—Mellemfjord, Luftfahrtfeuer. Kopenhagen, Schiessübungen. Kjøge-Bucht, Schiessübungen. Fredericia, Schiessübungen. Ordrup By, Funkmasten.
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 5 (31. Jan. 1931), Berlin, pp. 29-30.

DENVER. *See* Davidson, Walter V.: Winter flying from Denver to Los Angeles.

DEPARTMENT OF COMMERCE. *See* United States Department of Commerce.

DERSTROFF, HANNS. Die polarfahrt des "Graf Zeppelin." "SOS Nautilus" kein "Stop Zeppelin."
Die Umschau, 35. Jahrg., Heft 27 (4. Juli 1931), Frankfurt a. M., pp. 529-532, map.

DESGRANDSCHAMPS, R. G. Calcul et construction des avions légers . . .
Paris, F.-L. Vivien, 1931, ills., diagrs.

DESIGN. 1930 airplane design.
Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 22-25, diagrs., tabls.
— *See* Barnitz, Richard B.: The effect of airplane design on airports.
— *See* Brownback, Henry Lowe: Simplicity in light plane engine design.

DESIGN. *See* Gassner, A. A.: The economic aspects of transport plane design.

- *See* Joyce, Temple N.: Airplane design in relation to tactical requirements.
- *See* Rhode, Richard V.: The place of pressure distribution tests in structural design.
- *See* Russell, Frank H.: The design and production of military aircraft.
- *See* Young, Clarence M.: Design trends in approved type airplanes.

DESIMON, BEYER. *Flughafenanlagen.*

Berlin, Verlag Wilhelm Ernst und Sohn, 1931, pp. 156, ills.

DETONATION. *See* King, R. O., and H. Moss: Detonation and lubricating oil.

DETROIT. The Detroit aircraft exhibition.

Aeroplane, Vol. 40, No. 18 (May 6, 1931), London, pp. 825-826, 828, ills.

- Looking at the 1931 show.
Aviation, Vol. 30, No. 5 (May 1931), New York, pp. 274-283, ills.
- The national aircraft show at Detroit, Mich.
Airway Age, Vol. 12, No. 4 (Apr. 1931), New York, pp. 374-379, ills.
- A pre-view of the Detroit show.
Aviation, Vol. 30, No. 4 (April 1931), New York, pp. 213-217, ills.
- *See* Fairbanks, Rollin J.: A university wind tunnel. The Detroit single-return-flow open or closed experimental chamber tunnel described.
- *See* National Aircraft Show: National Aircraft Show. Detroit city airport, Detroit, Michigan, April 11-19, 1931.
- *See* Nevill, John T.: The national aircraft show of 1931.
- *See* Sherman, William F.: Aeronautics at the University of Detroit.

DETROIT NEWS. *See* Piersol, James V.: Adapting the airplane to the newspaper. A report covering an experiment conducted by the Detroit News.

DEUTSCHE LUFT HANSA A.G. *Flug- und Beförderungsleistungen der Deutschen Luft Hansa A.G. im Jahre 1930.*

Luftschau, 4. Jahrg., Nr. 10 (24. Mai 1931), Berlin, p. 77.

- Günstiger Geschäftsbericht der Deutschen Luft Hansa A.G.
Luftschau, 4. Jahrg., Nr. 13 (10. Juli 1931), Berlin, p. 3.
- Der luftfrachtverkehr; ein merkbuch für den eilversand.
Berlin, Presse: Dr. Selle-Eysler A.G., pref. 1929, pp. 16, ills.
- Meyers Luft-Reisebücher "Mitteleuropa."
Leipzig, Bibliographisches Institut A.G., 1931, pp. 556, ills.
- Mitteleuropa, unter mitwirkung der Deutschen Luft Hansa A.G., mit einem geleitwort von Erhard Milch.
Leipzig, Bibliographisches Institut A.G., 1931, pp. xii, 544, maps.
- Verbilligte Studentenflüge bei der Deutschen Luft Hansa.
Luftschau, 4. Jahrg., Nr. 17 (10. Sept. 1931), Berlin, p. 53.

DEUTSCHE LUFTFAHRT-VERBAND. *Ratgeber für deutsche Sportflieger bei Auslandsflügen.*

Berlin, Verlag und Druck Gebr. Radetzki, 1931, pp. 168, ills.

DEUTSCHE LUFTFAHRT-VERBAND. *Wir fliegen!*
Berlin-Tempelhof, Verlag H. A. Braun & Co., 1930, pp. 64, ills.

— *See* Winkler, Horst: *Das hochleistungs-segel-flugmodell, im auftrage des Jugendausschusses des Deutschen Luftfahrt-Verbandes e.v.*

DEUTSCHE ROTEN KREUZ. *Vom Fliegen. Zeitschrift für das Jugendrotkreuz.*
Berlin, Verlag Otto Elsner K.-G., 1931, pp. 16.

DEUTSCHE SEEWARTE. *See* Lohr, A.: *Cloud flights.*

DEUTSCHE VERSUCHSANSTALT FÜR LUFTFAHRT. *Die Deutsche Versuchsanstalt für Luftfahrt im Jahre 1930-31.*
Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 42 (17. Okt. 1931), Berlin, pp. 1313-1314.

— *See* Hoff, Wilh.: *Research work of the "DVL."*

DEUTSCHES MUSEUM. *Luftfahrtshistoriska samingar av intendenten T. Althin.*
Flygning, Årg. 9, N:R 9 (Sept. 1931), Stockholm, pp. 178-180, 185, ills.

DEUTSCH-RUSSISCHE LUFTVERKEHRSGESELLSCHAFT. *Dern Luft A B C des luftverkehrs.*
Berlin, Denter & Nicolas, 1931, pp. 72.

DEVIATORS. P.B. Deviators. A new type of instrument showing deviation from set course in all directions.
Flight, No. 1157, Vol. 23, No. 9 (Feb. 27, 1931), London, p. 180, ills.

DEWEY, N. S. *See* Simmons, L. F. G., and N. S. Dewey: *Wind tunnel experiments with circular discs.*

DEWOITINE. The Dewoitine D. 30 commercial airplane (French). A high-wing cantilever monoplane.
National Advisory Committee for Aeronautics, Aircraft Circulars No. 135, Feb. 20, 1931, Washington, February 1931, pp. 8, ills.

— The Dewoitine D 33 commercial airplane (French). A low-wing cantilever monoplane.
National Advisory Committee for Aeronautics, Aircraft Circulars No. 146, June 16, 1931, Washington, June 1931, pp. 9, ills.

DIAMOND, HARRY, and F. W. DUNMORE. *Airplanes land blind—guided by radio.*
Scient. Amer., Vol. 145, No. 1 (July 1931), New York, pp. 20-23, ills., diagrs.

DIAMOND, HARRY, and GOMER LEWIS DAVIES. *Characteristics of airplane antennas for radio range-beacon reception.*
United States Bureau of Standards, Journal of Research, Vol. 6, No. 5 (May 1931), Washington, pp. 901-916, ills., diagrs.

DIARD, ENNEMONDE. *Coups d'ailes de l'oiseau à l'avion. Préface de M. Laurent Eynac, Ministre de l'Air.*
Saint-Étienne, Imprimerie industrielle, 1930, pp. xiv, 532.

DIEDEN. *Flygarprofiler bröderna Dieden.*
Flygning, Årg. 9, N:R 3 (Mars 1931), Stockholm, p. 51, ports.

DIEHL, WALTER STUART. A new chart for estimating the absolute ceiling of an airplane.
National Advisory Committee for Aeronautics, Report No. 368, Jan. 26, 1931, Washington, U.S. Government Printing Office, 1930, [1931] pp. 7, diagrs., tabls.

— Some approximate equations for the standard atmosphere.
National Advisory Committee for Aeronautics, Report No. 376, March 21, 1931, Washington, U.S. Government Printing Office, 1931, pp. 12, diagrs., tabls.

DIEHL, WALTER STUART, and R. F. ANDERSON. Variable density wind tunnel test data on models of the Hawker Hornbill aeroplane and the AD-1 aerofoil section.

Aer. Res. Comm., Rep. Mem., No. 1357 (Ae. 488—T. 2987), June 1930, London, 1931, pp. 9, ills., diagrs., tabs.

DIESEL engines. Fiat Diesel-type engine.

Flight, No. 1151, Vol. 23, No. 3 (Jan. 16, 1931), London, p. 48, ill.

— *See* Goldingham, Arthur M.: High speed Diesel engines; automotive, aeronautical and marine, with full discussion on the various fuel injection mechanisms, together with sectional views of the numerous existing designs with their working parts.

— *See* Graves, W. H.: Aircraft Diesel engine fuels.

— *See* Hansen, F.: Der Statax-Halbdiesel-Flugmotor.

— *See* Junkers: Junkers-Jumo 4, der erste Dieselflugmotor der Welt.

— *See* Léglise, Pierre: A French Diesel engine.

— *See* Pye, D. R.: The limits of compression ratio in Diesel engines.

— *See* Rozendaal, John: Berlijnsche brief.

— *See* Seiliger, M.: Les moteurs Diesel sans compresseur et les moteurs semi-Diesel. Traduit de l'allemand par S. Schubert.

— *See* Spanogle, J. A., and H. H. Foster: Fuel injection of Diesel engines.

DIHEDRAL angle. *See* Bieniek, Czesław: Obliczanie momentu aerodynamicznego dla płatów o stałym kształcie profilu i o różnych obrysach i rozchyleniach.

DIJK, EVERT VAN. Over den oceaan, onze oost-west vlucht Europa-Amerika, met talrijke foto's van den tocht; inleiding van A. H. G. Fokker; voorwoord van Kingsford Smith.

Amsterdam, Scheltens & Giltay, 1930, pp. 233, ills.

DIRIGIBLES. Das Dock für 2 Zeppeline und 4 Kleinluftschiffe.

Die Umschau, 35. Jahrg., Heft 6 (7. Feb. 1931), Frankfurt a.M., p. 117, ill.

— *See* Airships.

— *See* Great Britain: Het Britsche luchtschepen-programma.

— *See* H.: Havens voor luchtschepen.

DISCS. *See* Simmons, L. F. G., and N. S. Dewey: Wind tunnel experiments with circular discs.

DISTANCE. *See* Coales, J. D.: The range of aircraft. The effect of specific weight of power unit with special reference to Diesel engines.

— *See* Mokrzycki, Gustaw Andrezj: Sur les plus grandes distances franchissables en avion.

DISTORTION. *See* Hertel, Heinrich: Die Verdrehsteifigkeit und Verdrehfestigkeit von Flugzeugbauteilen.

DISTRIBUTION. *See* Irwin, R. Randall: The problem of distribution.

DIXON, CHARLES. *The conquest of the Atlantic by air.*
London, S. Low, Marston & Co., Ltd., Philadelphia, J. B. Lippincott Company, 1931, pp. ix, 246, ills., port., map.

— Tales of the International Caterpillar Club.
Flight, No. 1163, Vol. 23, No. 15 (April 10, 1931), London, p. 322.

DOANE, R. R. *Aeronautical finance in 1930.*
Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 45-49, diagrs., tabls.

DOBBLER, MARTIN L. *The menace of fog.*
Aero Digest, Vol. 18, No. 2 (Feb. 1931), New York, p. 39, ill.

DOBROWOLNY, OTTO, UND E. STELZER. *Der menschliche flug; eine gemein-verständliche darstellung mit einer führung durch die abteilung "Luftfahrt" des Technischen museums in Wien.*
Wien, Deutscher verlag für jugend und volk, gesellschaft m.b.h., 1929, pp. 80, ills., diagrs.

DOBSON, G. M. B. *Ozone in the upper atmosphere and its relation to meteorology.*
Nature, Vol. 127, No. 3209 (May 2, 1931), London, pp. 668-672, diagrs.

DOCK. *See Hangars.*

DOLLFUS, CHARLES. *See Hirschauer, L., et Charles Dollfus: L'année aéronautique 1930-1931.*

DOMINICUS, D. *Warum Gleit- und Segelflug in Deutschland?*
Luftschau, 4. Jahrg., Nr. 11 (10. Juni 1931), Berlin, p. 82, ill.

DONOVAN, WILLIAM J. *Origin and development of radio law.*
Air Law Review, Vol. 2, No. 2-4 (April, July, Nov. 1931), New York, pp. 107-129, 349-370, 468-477.

DOPE. *See Colby, Thomas B.: Troubles with dope. How to prevent them.*

— *See McCutcheon, W. W.: Aircraft finishes.*

DORAND, RENÉ. *L'amélioration des hélices et leur calcul de résistance.*
Paris, Le Centre de Documentation Aéronautique Internationale de L'Aéro-Club de France, 1931, pp. 25, diagrs.
Aéro-Club de France. *Travaux du Cercle d'Études Aérotechniques, Fasc. IV.*

DORNIER. *Dornier-Flugboot Do.S.*
Luftschau, 4. Jahrg., Nr. 1 (10 Jan. 1931), Berlin, pp. 5-6, ill.

— *Entwurf eines Dornier-Rennflugbootes.*
Luftschau, 4. Jahrg., Nr. 17 (10 Sept. 1931), Berlin, p. 53, ill.

— *See Heinze, Edwin P. A.: The New Dornier landplane.*

DORNIER, CLAUDE. *Vorträge und abhandlungen aus dem gebiete des flugzeugbaues und luftschiffbaues 1914-1930.*
Berlin-Lichterfelde, Verlag für Deutsches Flugwesen g.m.b.h., 1930, pp. 145, ills., diagrs.

DORNIER, CLAUDIO, UND E. TILGENKAMP. *Do X—Das grösste Flugschiff der Welt.*
Schaubücher Bd. 41. Herausgeber Emil Schaeffer. Zürich und Leipzig, Orell Füssli Verlag, ill.

DORSET GLIDING CLUB. *Gliding; a yearbook published by Dorset Gliding Club dealing with every aspect of motorless flight . . . 1931.*
Weymouth, Dorset Gliding Club, 1931, ills., tabl.
Editor H. R. R. Goodyear.

Do S-HAS. *See Bader, H. G.: Dornier-Flugboot "Do S-Has."*

DOUGLAS. *See* Cowling: Effect of ring type engine cowls on model of Douglas XO-14. Five-foot wind tunnel test No. 35.

DOUGLAS, G. P., W. G. A. PERRING, AND R. A. FAIRTHORNE. Wind tunnel tests with high tip speed air-screws. Experimental investigation of blade twist under load.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 394-400, ills., tabls. Rep. Mem. No. 1272 (Ae 418.)

DOWD, R. E. The Boeing devices.

Aero Digest, Vol. 19, No. 5 (Nov. 1931), New York, pp. 78-80, ills.

— Model builder's balance. Make it in your own workshop.
Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 118-120, 124, ills.

DOWNEY, H. C. How maintenance costs were lowered. Parts 1 and 2.

Airway Age, Vol. 12, Nos. 4, 5 (Apr., May, 1931), New York, pp. 340-343, 450-454, ills.

DOWNWASH. *See* Petersohn, E.: Downwash measurements behind wings with detached flow.

DOWTY, GEORGE H. Aircraft wheels and tyres. A review of current practice with comments on merits and demerits of various types.

Aircraft Engineering, Vol. 3, No. 27 (May 1931), London, pp. 114-116, ills., diagr.

Do.X. Un vol dans le Do.X.

L'Aéronautique, 13me année, No. 141 (fév. 1931), Paris, pp. 67-73, ills.

— *See* Dornier, Claudius, und E. Tilgenkamp: Do.X.—das grösste Flugschiff der Welt.

— *See* G. 38: El "G. 38" y el "Do.X" en España.

— *See* Gustosa, Corrado: Da Amsterdam a Lisboa a bordo del Do X.

— *See* Jones, Bradley: The Do-X, or safety first, performance second.

— *See* Schildhauer, C. H.: The DOX—Profitable transportation.

— *See* Sharp, Edward R.: An air journey de luxe.

DRAG. Cutting down drag.

Aeroplane, Vol. 41, No. 20 (Nov. 11, 1931), London, p. 1147, ills.

— *See* Bradfield, F. B., and W. G. A. Perring: Drag tests on a large model in a small tunnel.

— *See* Bradfield, F. B., and R. A. Fairthorne: Drag tests on full scale float of S. 5.

— *See* Bradfield, F. B.: The effect on lift and drag of corrugating the surface of an aerofoil.

— *See* Bradfield, F. B., and F. W. G. Greener: Wind tunnel test of the increased drag of a quarter scale float on adding rivets.

— *See* Crouch, A. S.: Measurement of lift and drag of Southampton seaplane.

— *See* Fage, A.: Drag of circular cylinders and spheres.

— *See* Fairthorne, R. A.: Drag of flags.

— *See* Horn, Fritz: Schiffsschlepp versuche.

— *See* Jones, E. T.: Drag and heat dissipation of three radiator systems.

DRAG. *See* Lee, John G.: On the lift and drag of wings.

— *See* Munk, Max Michael: The induced drag.

— *See* Ower, E., and C. T. Hutton: The drag of small streamline bodies.

— *See* Thompson, Floyd La Verne, and P. H. Keister: Lift and drag characteristics of a cabin monoplane determined in flight.

DRAKENSBERG. The Drakensberg accident.
Aeroplane, Vol. 40, No. 19 (May 13, 1931), London, pp. 864, 866, 868.

DREIECK. *See* Tailless: A new tail-less aeroplane. A step towards the development of a large passenger-carrying "All-wing" aircraft.

DREISONSTOK, JOSEPH YOUNG. Navigation tables for mariners and aviators.
United States Hydrographic Office, Publication No. 208, Washington, pp. iv, 111, tabls.

— Rapid air navigation.
Aero Digest, Vol. 19, No. 5 (Nov. 1931), New York, pp. 29-31, 86, diagrs.

DREW, GEORGE ALEXANDER. Canada's fighting airmen.
Toronto, Can., The MacLean Publishing Company, Ltd., 1930, pp. 305, ills.

DRIFT. *See* Weems, Philip Van Horn: The Gatty ground speed and drift indicator.

DRYDEN, HUGH LATIMER. Reduction of turbulence in wind tunnels.
National Advisory Committee for Aeronautics, Report No. 392, Aug. 19, 1931, Washington, U.S. Government Printing Office, 1931, pp. 11, ills., diagrs., tabl.

DRYDEN, HUGH LATIMER, and GEORGE C. HILL. Wind pressure on a model of a mill building.
United States Bureau of Standards, Journal of Research, Vol. 6, No. 4 (April 1931), Washington, pp. 735-755, ill.

DRYDEN, HUGH LATIMER. *See* Briggs, Lyman James, and H. L. Dryden: Aerodynamic characteristics of circular-arc airfoils at high speeds.

DU CLUZEL. Il calcolatore "du Cluzel."
Riv. Aer., Anno 7, N. 3 (marzo 1931), Roma, pp. 535-540, ills.

DUCOUT, MARCEL S. Le rallye-parachutes de l'Aéro-club.
L'Aérophile, 39e année, No. 6 (15 juin 1931), Paris, pp. 167-169, ills.

— Les terrains.
L'Aérophile, 39e année, No. 7 (15 juil. 1931), Paris, p. 193.

DUKE, DONALD. Procedure and personnel of the Pan American airways system.
Aero Digest, Vol. 18, No. 2 (Feb. 1931), New York, pp. 35-37, 119, ills.

DUNCANSON, F. Variable lift wings.
Aircraft Engineer, Flight Engineering Section, Suppl. to 1173, Vol. 23, No. 25 (June 19, 1931), London, pp. 556a-556g (41-47), ills., diagrs.

DUNMORE, FRANCIS WINKLEY. A course indicator of pointer type for the visual radio range-beacon system.
United States Bureau of Standards, Journal of Research, Vol. 7, No. 1 (July 1931), Washington, pp. 147-170, ills., diagrs.

— *See* Diamond, H., and F. W. Dunmore: Airplanes land blind—guided by radio.

DUPIN, P., ET TRISSE-SOLIER. Hydrodynamique.—Sur les tourbillons alternés de Benard-Karman et la loi de similitude dynamique de Reynolds.
C.R. Acad. Sci., T. 192, No. 17 (27 avril 1931), Paris, pp. 1017-1020, ill.

DUPIN, P. *See* Camichel, C., et P. Dupin: *Hydrodynamique.—Sur les divers modes de construction des filets a l'entrée d'un ajutage.*

DUPUIS, GUY D. *Le rail et l'aile (étude économique sur les transports ferroviaires et aériens.)*
Paris, Vivien, 1931.

DUPUY, P. *Aeroplane speed characteristics. An attempt to elucidate theory in practical terms for the aeroplane pilot.*
Aircraft Engineer, Vol. 3, No. 30 (Aug. 1931), London, pp. 187-190, diagrs.

— The "Kahn" system of map projection.
Aircraft Engineering, Vol. 3, No. 25 (March 1931), London, pp. 57-60, maps., diagrs.

DURALUMIN. *See* Weiss, Stanisław: *Połączenia nitowe duraluminowe.*

DURÁN, HERIBERTO. *Los trasportes aéreos en los Estados Unidos de Norteamérica.*
Ibérica, Año 18, Num. 868 (7 marzo 1931), Barcelona, pp. 151-152, ill.

DUSEN, W. I. VAN. *Wings over three Americas.*
Scient. Amer., Vol. 145, No. 4 (Oct. 1931), New York, pp. 234-236, ill.

DYCER. *See* Stimson, Thomas E., Jr.: *Why the Dysers succeed.*

DYNAMOMETER. *See* Olszewski, Stanisław: *Dynamometr powietrzny Heenan-Fell zainstalowany w Stacji Silnikowej I.B.T.L.*

DYVAUT, CAMILLE CLAUDE HYACINTHE. *Recueil de problèmes-types avec solutions à l'usage des candidats au brevet militaire de mécanicien d'aéronautique et aux certificats d'instruction et de perfectionnement technique des élèves pilotes et des élèves observateurs et mitrailleurs.*
Paris, Charles-Lavauzelle & Cie., 1930, pp. 180, diagrs.

DZIEWOŃSKI, JÓZEF. *Indyktor elektro-pneumatyczny syst. "Farnboro."*
Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne, Nr. 3, Warszawa, 1930, pp. 39-45, ill., diagrs.

— *Zastosowanie nomogramów do obliczania mocy i zużycia paliwa silników lotniczych.*
Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne, Nr. 2, Warszawa, 1930, pp. 25-34, ill., diagrs.

— *See* Peter, Franciszek, Stanisław Olszewski, Józef Dziewoński, i Hubert Krasiński: *Badania nad zastosowaniem mieszanki alkoholowej do silnika Lorraine-Dietrich 450 KM.*

DZWONKOWSKI, KAZIMIERZ. *Sondy do pomiarów szybkości samolotu.*
Instytut Badań Technicznych Lotnictwa Sprawozdanie, kwartalne, Bulletin No. 7, Warszawa, 1931, pp. 87-89, ill.

E

EAGLE. *A new eagle camera.*

Aeroplane, Vol. 41, No. 26 (Dec. 23, 1931), London, pp. 1433-1434, ill.

EAKER, IRA C. *The real air hero.*

U.S. Air Services, Vol. 16, No. 4 (April 1931), Washington, pp. 33-34.

— *What's the matter with Mr. Rogers?*

U.S. Air Services, Vol. 16, No. 1 (Jan. 1931), Washington, pp. 21-24, ill.

EARHART, AMELIA. *Putting air travel into mass production.*

Aviation, Vol. 30, No. 5 (May 1931), New York, pp. 292-294, ill.

— *See* Records: *Nouveaux records homologués par la F.A.I.*

EARS. *See* Howell, A. J.: Ears your own control.

EASON, ALEC B. Flow and measurement of air and gases.
London, Charles Griffin and Co., Ltd., 1930, pp. xii, 254.

EAST HARTFORD. Rentschler field at East Hartford.
Airway Age, Vol. 13, No. 1 (Jul. 4, 1931), New York, pp. 47-48, illus.

EASTMAN, FRED SCOVILLE. Vacuum-tube control for electric wind-tunnel balances.
Seattle, University of Washington, 1931, pp. ill, 5-16, illus., diagrs.
Washington University, Engineering Experiment Station, Engineering Experiment Station Series, Bulletin No. 55.

EBERHARD, O. v. Ballistik.
Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 3. Teil.
Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1930, pp. 463-537, illus.

EBERT. Ortsbezeichnung zur Luftorientierung.
Die Umschau, 35. Jahrg., Heft 14 (4. April 1931), Frankfurt a.M., p. 271, illus.

EBERT, HEINRICH. Die DVL-Messnaben und ihre Verwendung beim Flugversuch.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 20. Heft (28. Okt. 1931), München und Berlin, pp. 615-616, ill., diagr.

EBNER, HANS. Die Berechnung regelmässiger, vielfach statisch unbestimmter Raumfachwerke mit Hilfe von Differenzengleichungen.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 246-288, illus., diagrs., tabls.

ECK, BRUNO. Strömungslehre an hand von strömungsbildern; darstellung der wichtigsten strömungsvorgänge aus der flugtechnik und dem maschinenbau mit 60 strömungsaufnahmen.
Köln, Selbsverlag, 1931, pp. 18, illus.

ECKENER, HUGO. Das werk des grafen Zeppelin.
Frankfurt am Main, M. Diesterweg, 1930, pp. 36, illus. Kranz-bücherei, Hft. 114.

— *See* Schäffer, Ernst: Glück ab; bahnbrecher der lüfte.

EDDIES. *See* Thom, A.: Eddies behind a circular cylinder.

EDDY, MYRON FISH. Aircraft radio.
New York, The Ronald Press Company, 1931, pp. x, 284, illus., diagrs.

EDGAR, GRAHAM. High temperature knock testing.
Aircraft Engineering, Vol. 3, No. 29 (July 1931), London, p. 171.

EDISON. Edison on the flying machine.
U.S. Air Services, Vol. 16, No. 11 (Nov. 1931), Washington, D.C., p. 15.

EDUCATION. *See* Larner, L., and J. Ackeret: Aeronautical education and research at the Swiss Institute of Technology in Zurich.

EGGERS, WILHELM. Mein flugzeugmodell, selbstfertigung leistungsfähiger modelle, nicht anschauungsmodelle, praktische bauanleitung.
Leipzig, Hochmeister-Thal, 1931.

EGYPT. Civil aviation in Egypt.
Aeroplane, Vol. 40, No. 24 (June 17, 1931), London, p. 1156.

— Egyptian army air service.
Flight, No. 1193, Vol. 23, No. 45 (Nov. 6, 1931), London, 1099, ill.

EGYPT. A flight into Egypt.

Aeroplane Vol. 40, no. 11 (March 18, 1931), London, p. 479, ill.

EISNER, FRANZ. Über die Zweckmässigkeit der Telegraphie und Telephonie im Flugfunkverkehr mit Berücksichtigung neuer experimenteller Untersuchungen.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 605-614, ills., diagrs.

EISNER, FRANZ, G. SUDECK, RUDI SCHRÖER und O. ZINKE. Vergrösserung der effektiven Höhe von Flugzeugschleppantennen.

Luftfahrtforschung, Band 8, Heft 6, 1931, München und Berlin, R. Oldenbourg, pp. 14, ills, tabls.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 615-628, ills., diagrs., tabls.

EKWALL, G. Stockholms blivande lantflygplats i bromma.

Flygning, Årg. 9, N: R 12 (Dec. 1931), Stockholm, pp. 236-238, ills.

ELASTICITY. Elasticity and fatigue.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 52-57.

— See Van den Broek, John Arbaham: Elastic energy theory.

ELECTRICITY. See Campbell, H. A.: Applications of electricity in aircraft.

ELEKTRON metal. See Ridder, E. I. de: The use of elektron metal in airplane construction.

ELIÁS, FRANZ. The transference of heat from a hot plate to an air stream.

National Advisory Committee for Aeronautics, Technical Memorandums No. 614, April 2, 1931, Washington, April 1931, pp. 25, ills., diagrs.

ELLEHAMMER, JACOB CHRISTIAN HANSEN. Jeg fløj... nogle erindringer fra en uforglemmelig tid.

København, Drengebladet, 1931, pp. 118, ills.

ELMIRA. See Hirth, Wolfram K. E., Martin H. Schempp, and Jack Herrick: Elmira soaring contest, 1930.

— See Woolhope, Artur K. S.: Zweiter amerikanischer nationale Segelflugwettbewerb in Elimra.

ELY, L. B. Flying artillery.

Aero Digest, Vol. 18, No. 6 (June 1931), New York, pp. 38-39, 142, ills.

EMDEN, R. Der Friiballon.

Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 3. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m. b. H., 1930, pp. 113-131, ills., table.

EMPIRE STATE BUILDING. See Pickett, Charles: The Empire State building mooring mast.

ENDŌ, YOSITOSI. Atomic heat at constant pressure of crystalline substances.

Report of the Aeronautical Research Institute, Tōkyō Imperial University, No.71 (Vol. 6, 5), (April 1931), Tōkyō, pp. 71-82, tabls.

ENDURANCE. See Bouché, Henri: 10.500 kilomètres en avion sans escale.

ENGEL, JOHN H. Rings—How to install them.

Western Flying, Vol. 9, No. 3 (March 1931), Los Angeles, Cal., pp. 32-34, ills.

ENGINE oil. See Oils: Aviation engine oil.

ENGINE speed. *See* Swan, Andrew: Investigation into the increase in permissible engine speed consequent upon a reduction in the weight of the reciprocating and rotating masses.

ENGINEERING. An introduction to aeronautical engineering. For students engaged in all branches of aeronautical work.

London, Gale & Polden, Ltd., 1931, Contents: Vol. 1: Mechanics of flight, by A. C. Kermode. Vol. 2: Structures, by J. D. Haddon. Vol. 3: Materials.

— *See* Meyer, Louis A.: Simplified engineering and its application.

— *See* Roché, J. A.: Engineering, 1930-31.

ENGINES. An aero-engine testing plant.

Engineer, Vol. 152, No. 3944 (Aug. 14, 1931), London, p. 177, ill.

— Aircraft oil engines.

Mech. Eng., Vol. 53, No. 12 (Dec. 1931), New York, pp. 908-909.

— L'ammortizzazione delle vibrazioni nei motori d'aviazione.

Riv. Aer., Anno 7, N. 4 (aprile 1931), Roma, pp. 148-154, ills., diagr.

— Approved aircraft engines. Third annual edition.

Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Cal., pp. 47-68, ills.

— Contagiri elettrici per motori d'aviazione.

Riv. Aer., Anno 7, N. 12 (dic. 1931), Roma, pp. 570-572, ills.

— Diesel versus gasoline-engined plane.

Scient. Amer., Vol. 145, No. 2 (Aug. 1931), New York, pp. 401-424, ill., tabl.

— Engines.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 40-48.

— Engines at the Paris show.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1157, Vol. 23, No. 9 (Feb. 27, 1931), London, pp. 184f-184h (14-16).

— L'équipement du groupe moteur. VII.—Compresseurs.

L'Aéronautique, 13me année, No. 142, 143 (mars.-avril 1931), Paris, pp. 101-109, 141-149, ills., diagrs., tabls.

— Fiat works producing seven-cylinder air-cooled engine for small planes.

Automotive Ing., Vol. 65, No. 12 (Sept. 19, 1931), New York, pp. 428-429, ills.

— Groupes-moteurs récents.

L'Aéronautique, 13me année, No. 150 (nov. 1931), Paris, pp. 393-399, ills.

— Increasing power plant efficiency.

Aviation, Vol. 30, No. 12 (Dec. 1931), New York, pp. 695-698, ills.

— A new light aeroplane engine. The 60-h.p. four-cylinder inverted air-cooled Hirth with coil-ignition described.

Aircraft Engineering, Vol. 3, No. 31 (Sept. 1931), London, p. 227, ills.

— I nuovi motori francesi del XII Salone aeronautico di Parigi.

Riv. Aer., Anno 7, N. 5 (mag. 1931), Roma, pp. 305-318, ills.

— Nya flymotorer och flyplan.

Flygning, Årg. 9, N:R 8, (Aug. 1931), Stockholm, pp. 152-153, 163, ills.

— A spring hub for aero-engines. A flexible airscrew drive damping out torque variation which also forms a transmission dynamometer.

Aircraft Engineering, Vol. 3, No. 33 (Nov. 1931), London, pp. 279-280, ills.

— *See* Alfa Romeo: Le perfette costruzioni motoristiche per l'aviazione dell' Alfa Romeo.

ENGINES. *See* Andrews, W. R.: Air-cooled engine power and weight.

— *See* Andriani, Oronzo: Lubrificazione appropriata dei motori d'aviazione a caratteristiche dei lubrificanti.

— *See* Argus: A new Argus engine.

— *See* Armstrong Siddeley: Arsmtrong Siddeley motors.

— *See* Bailey, Benj. F.: The design of capacitor motors for best starting performance.

— *See* Banks, F. Rodwell: The evolution of a Schneider engine.

— *See* Behmann, Mario: Un nuovo motore di aviazione.

— *See* Boedecker, Kenneth J.: Engine servicing and service organizations.

— *See* Boerlage, G. D., and J. J. Broeze: The ignition quality of fuels in compression-ignition engines.

— *See* Boone, Andrew R.: Engine service in the Navy.

— *See* Bradley, W. F.: Jalbert heavy oil engine using carburetor and pre-mixing cylinder under construction for the French air service.

— *See* Brandt, Richard: Untersuchung über die Erregung von Drehschwingungen in Reihenmotoren.

— *See* Bréguet: Stan samolotu Bréguet XIX Nr. 60.3 po odbytym locie Warszawa-Tokio-Warszawa.

— *See* Brownback: Brownback "Bumble Bee" three cylinder light aircraft engine is air cooled.

— *See* Brownback, Henry Lowe: Simplicity in light plane engine design.

— *See* Bulman, G. P.: Engines at the Paris Aero Show.

— *See* Capetti, Antonio: Il motore leggero ad olio pesante.

— *See* Capetti, Antonio: Ricerche sperimentalì sull'uso di miscele diluite e di miscele fortemente preriscaldate nei motori a carburazione.

— *See* Carter, B. C., and N. S. Muir: Torsional vibration of crankshafts. Beardmore "Tornado" airship engine investigations.

— *See* Castagna, A.: Prove su radiatori per motori di aviazione.

— *See* Caunter, C. F.: Light aero engines.

— *See* Chenoweth, Opie: Engines in 1930.

— *See* Chilton, R.: Air-cooled cylinder-head design.

— *See* Christian, Manfred: A pioneer inverted engine. The Argus "As 8," fully described and illustrated with drawings and a power curve.

— *See* Christian, Manfred: Rückblick auf die Motorenschau des 12. Pariser Salons, Dezember 1930.

— *See* Coales, J. D.: The range of aircraft. The effect of specific weight of power unit with special reference to Diesel engines.

ENGINES. *See* Comité Français de Propagande Aéronautique: Notice descriptive des appareils, primés au concours pour l'amélioration de la sécurité des groupes motopropulseurs d'aéronautique, organisé par le C. F. P. Aé. avec l'appui du Ministère de l'Air.

- *See* Continental: Continental A40 engine.
- *See* Cosci, Domenico: Manuale del motorista d'aviazione.
- *See* Cowling: Effect of ring type engine cowls on model of Douglas XO-14. Five-foot wind tunnel test No. 35.
- *See* Cylinder grinding: Cylinder grinding extraordinary.
- *See* Dalby, W. E.: Power and the internal combustion engine.
- *See* Davies, S. J., and E. Giffen: Injection, ignition and combustion in high-speed heavy-oil engines.
- *See* Dziewoński, Józef: Indykator elektropneumatyczny syst. "Farnsboro".
- *See* Dziewoński, Józef: Zastosowanie nomogramów do obliczania mocy i zużycia paliwa silników lotniczych.
- *See* Farleigh, Minor M.: Principles and problems of aircraft engines.
- *See* Fedden, A. H. R.: Air-cooled compression ignition engines (Moteurs d'aviation à huile lourde refroidis par l'air).
- *See* Fedden, A. H. R.: A memorandum on the design and development of the Bristol Mercury 1927 Schneider Trophy racing engine.
- *See* Fenning, R. W., and F. T. Cotton: Experiments on the ignition of gases by sudden compression.
- *See* Fraser, M. S.: The engine that flew around the world.
- *See* French, Ned: Deeble duplex engine.
- *See* Gelalles, Achille George: Coefficients of discharge of fuel injection nozzles for compression-ignition engines.
- *See* Gelalles, Achille George: Effect of orifice length-diameter ratio on fuel sprays for compression-ignition engines.
- *See* Goldingham, Arthur M.: High speed Diesel engines; automotive, aeronautical and marine, with full discussion on the various fuel injection mechanisms, together with sectional views of the numerous existing designs with their working parts.
- *See* Guerendiain, Antonio: Recientes perfeccionamientos del motor de explosión, principalmente en sus aplicaciones a la aviación.
- *See* Handasyde, G. H.: Building light aeroplane engines. The design and manufacturing processes of the Cirrus-Hermes engines examined and described.
- *See* Handasyde, G. H.: Building radial engines. Central control and a high finish characterize the Bristol Company's production.
- *See* Handasyde, G. H.: Rolls-Royce aero-engines. Reasons for the high standard of workmanship and efficiency at derby.

ENGINES. *See* Hansen, Asmus: Thermodynamische Rechnungsgrundlagen der Verbrennungskraftmaschinen und ihre Anwendung auf den Höhenflugmotor.

— *See* Hanson, Earl: Testing engines for A. T. C.

— *See* Helmore, W.: Engine performance with gaseous fuels. Part I—Characteristics and engine performance of gaseous fuels obtained from oil.

— *See* Hirth: 50-60 PS-Hirth-Vierzylinder-Flugmotor.

— *See* Hirth: The Hirth light plane engine.

— *See* Hirth: Ein neuer Motor für Sport-flugzeuge, der Hirth "H.M. 60".

— *See* Hispano-Suiza: Hispano-Suiza 1,000 Hp. 18 cylinder stock aircraft engine is designed after 1929 Schneider Cup race entry.

— *See* International Nickel Company: A directory of American aircraft engines.

— *See* Judge, Arthur William: Automobile and aircraft engines.

— *See* Judge, Arthur William: The testing of high speed internal combustion engines.

— *See* Junkers: Junkers-Jumo 4, der erste Dieselflugmotor der Welt.

— *See* Junkers: The Junkers "Jumo 4" heavy-oil aircraft engine.

— *See* Junkers: Il motore a olio pesante per aviazione, Junkers "Jumo 4."

— *See* King, R. O., and H. Moss: Detonation, spark-plug position, and engine speed.

— *See* Kühn, Fritz: Erhöhung der Sicherheit von Luftfahrzeugen durch Bekämpfung der Brandgefahr.

— *See* Kuipers, C.: De Armstrong-Siddeley vliegtuigmotoren.

— *See* Kuipers, C.: Nieuwe Lorraine-Dietrich-motoren.

— *See* Kurtz, Oskar: Über die mechanischen Betriebsbeanspruchungen des Vergaserflugmotors.

— *See* L. P.: Un moteur de Coupe Schneider 1929; de 1600 HP Hispano-Suiza.

— *See* Lake, E. F.: Aircraft engine crankshafts.

— *See* Lake, E. F.: Heat treatment of aircraft engine crankcases.

— *See* Léglise, Pierre: Clerget 100 hp. heavy-oil engine.

— *See* Léglise, Pierre: A French Diesel engine.

— *See* Léglise, Pierre: Les moteurs français du dernier Salon.

— *See* Léglise, Pierre: Superchargers.

— *See* Maidment, C. C.: Servicing the exported engine.

— *See* Marcotte, E.: Les moteurs à huile lourde dans l'aéronautique.

— *See* Mardles, R.: Oxidation characteristics of fuel vapours with regard to engine detonation.

ENGINES. *See* Marvin, Charles Frederick, Jr., and Robert D. Best: Flame movement and pressure development in an engine cylinder.

— *See* Menasco Motors, inc.: Engine handbook for Menasco B-5 pirate.

— *See* Möller, W.: Der Flugmotor. Teil III, Moderne Flugmotoren.

— *See* Montelucci, G.: La detonazione nei motori a scoppio.

— *See* Muir, N. S., and A. Terry: A harmonic analysis of the torque curves of a single cylinder electric ignition engine when throttled to various mean indicated pressures, with an appendix on the estimation of forcing torques in multi-cylinder engines.

— *See* Nebesar, Robert J.: Supercharging the aeroplane engine and increasing speed with altitude.

— *See* Nutt, Arthur: The cooling of engines.

— *See* Nutt, Arthur: Installing the engine.

— *See* Nutt, A. E. Woodward, A. F. Scroggs, and E. Finn: Range of aircraft with air-cooled radial engine using altitude control.

— *See* Oestrich, Hermann: Die Aussichten des Strahltriebs für Flugzeuge unter besonderer Berücksichtigung des Abgas-Strahltriebs.

— *See* Oestrich, Hermann: Theoretische Untersuchung des Nachladeverfahrens als Mittel zur Aufrechterhaltung der Leistung von Viertakt-Motoren in grösseren Höhen.,

— *See* Oestrich, Hermann: Untersuchung eines Flugmotoren-Geblases, Bauart Argus-Roots.

— *See* Olderman, Howard C.: Trouble shooting on aviation engines.

— *See* Olszewski, Stanisław: Dynamometr powietrzny Heenan-Fell zainstalowany w Stacji Silnikowej I.B.T.L.

— *See* Page, Victor W.: Aviation engine examiner.

— *See* Paris: De luchtvaart-salon te Parijs.

— *See* Parkinson, Leslie R.: Technical description of the Jacobs L-3 aircraft engine.

— *See* Philippovich, Alexander v.: Der jetzige Stand der Prüfung von Flugmotorenkraftstoffen.

— *See* Philippovich, Alexander v.: Vergleichende motorische Untersuchung von Kraftstoffen.

— *See* Pobjoy: The Pobjoy "R" type engine.

— *See* Polesine, Jotti da Badia: Il motore a vapore ed il suo impiego in aeronautica.

— *See* Pownall, C. A.: Better engines for Navy planes.

— *See* Pye, D. R.: Compression-ignition engines.

— *See* Pye, D. R.: The limits of compression ratio in Diesel engines.

— *See* Pye, D. R.: The origin and development of heavy-oil aero engines.

ENGINES. *See* Raffaelli, Italo: Apparati motori a vapore per la navigazione stratosferica.

— *See* Raffaelli, Italo: Apparecchio Ba/33 con [motore] Lynx suralimentato.

— *See* Ricardo, Harry R.: The high-speed internal-combustion engine.

— *See* Robinson, William: Heavy-oil engines of Akroyd type; being developments of compression-ignition oil engines, including modern applications to land purposes, marine and airship propulsion, and railway traction.

— *See* Rolls-Royce: The home of Rolls-Royce engines.

— *See* Rolls-Royce: Rolls-Royce racing engine.

— *See* Rolls-Royce: The Rolls-Royce racing engine. A description of the experimental and development work involved in its evolution.

— *See* Rolls-Royce limited: Modern aircraft fitted with Rolls-Royce engines. Avions modernes équipés de moteurs Rolls-Royce. Aviones modernos equipados con motores Rolls-Royce.

— *See* Rothrock, Addison M.: Combustion in a high-speed compression-ignition engine.

— *See* Rothrock, Addison M.: Hydraulics of fuel injection pumps for compression-ignition engines.

— *See* Rozendaal, John: Berlijnsche brief.

— *See* Sales: Suggestions pour le refroidissement des moteurs par circulation d'eau.

— *See* Salmson: Concerning Salmson aero engines.

— *See* Salmson: The 50 hp. British Salmson aero engine.

— *See* Schnauffer, Kurt: Untersuchung von Verbrennungsvorgängen in Zündmotoren mittels elektrischer Messverfahren.

— *See* Scheubel, F. N.: Über den Luftwiderstand luftgekühlter Sternmotoren.

— *See* Schey, Oscar William: The comparative performance of superchargers.

— *See* Schey, Oscar William, and Vern G. Rollin: The effect of increased carburetor pressure on engine performance at several compressed ratios.

— *See* Schey, Oscar William, and Arnold E. Biermann: The effect of valve timing upon the performance of a supercharged engine at altitude and an unsupercharged engine at sea level.

— *See* Schilhansl, Max: Modellversuche zur Ermittlung des Leistungsbedarfs für die künstliche Belüftung von Motorenprüfständen.

— *See* Schnauffer, Kurt: Das Klopfen von Zündermotoren.

— *See* Seguin, L. et A.: Étude des hélices, des injecteurs et des moteurs en fonctionnement par le méthode stroboscopique et par le photographie au millionième de seconde.

— *See* Seiliger, M.: Les moteurs Diesel sans compresseur et les moteurs semi-Diesel. Traduit de l'allemand par S. Schubert.

— *See* Siemen: Siemens flygmotorer.

ENGINES. *See* Spanogle, J. A., and H. H. Foster: Fuel injection of Diesel engines.

- *See* Spanogle, J. A., and C. S. Moore: Performance of a compression-ignition engine with precombustion chamber having high-velocity air flow.
- *See* Spanogle, J. A., and E. G. Whitney: The effectiveness of a double-stem injection valve in controlling combustion in a compression-ignition engine.
- *See* Stieglitz, Albert; Der DVL-Torsiograph, ein drehschwingungs-Messgerät für Fahrzeugmotoren.
- *See* Stokes, P. H.: Performance of a compression ignition unit with reduced intake and exhaust pressures.
- *See* Swan, Andrew: Piston and connecting rod weights and other relative data in modern aircraft engines.
- *See* Swan, Andrew: The progress of aero engine design at the Paris show.
- *See* Swan, Andrew: Recent developments in engine cooling.
- *See* Swan, Andrew: Recent progress in compression ignition engines.
- *See* Swan, Andrew: The value of reduced weight of reciprocating and rotating masses on engine performance with special reference to the permissible cost of lighter materials.
- *See* Sweden: Den Svenska flygmotortillverkningen.
- *See* Taylor, C. Fayette: Power plant progress.
- *See* Taylor, E. S.: Bearing loads on radial-engine crankshafts.
- *See* Taylor, Philip B.: The thrust of radial engines. An examination of the present practice with suggestions for increasing effective thrust horsepower.
- *See* Thoelz, W., und W. Haeder: Flugmotoren in Leicht- und Schwerölbauart.
- *See* Thompson, James G.: Engine service and maintenance.
- *See* Thompson, James G.: Engine service and maintenance. Part IV—The Kinner K-5.
- *See* Thompson, James G.: Engine service and maintenance. Part VII—Warner Scarab and Scarab junior.
- *See* Thompson, James G.: Engine service and maintenance. Part VIII—Cirrus engines.
- *See* Thompson, James G.: Engine service and maintenance. Part IX—Wright and DH Gipsy.
- *See* Thompson, James G.: Engine service and maintenance. Part X—Le Blond engines.
- *See* Thompson, James G.: Engine service and maintenance. Part XI-C—Trouble shooting.
- *See* Thompson, James G.: Engine service and maintenance. Part XI-D—Trouble shooting.
- *See* Tizard, H. T.: Compression-ignition engines.

ENGINES *See* Townend, H. C. H.: Reduction of drag of radial engines by the attachment of rings of aerofoil section, including interference experiments of an allied nature, with some further applications.

- *See* United States Department of Commerce. Aeronautics Branch: Aircraft engine testing. July 1, 1930.
- *See* Weidinger, Hanns: Liquid cooling of aircraft engines.
- *See* Weidinger, Hanns: Versuche mit Heisskühlung am Flugmotor.
- *See* Wells, John E.: The manufacture of precision parts for aircraft engines.
- *See* Whittle, F. O. F.: The turbo-compressor and the supercharging of aero engines.
- *See* Wilkinson, G. S.: Napier Lion series VIIB engine for 1927 Schneider Trophy.
- *See* Zaja, R.: Sul calcolo delle molle per valvole dei motori d'aviazione.
- *See* Zuck, H. E.: Engine performance at high compression ratios.

ENGLAND. Några intryck från en kommandering till England.
Flygning, Årg. 9, N: R 7 (Juli 1931), Stockholm, pp. 140-142.

- *See* Glazebrook, Richard: Aeronautical research in England. A summary of ten years' work directed by the Aeronautical Research Committee.
- *See* Great Britain.
- *See* Harper, Harry: By air from England to India.
- *See* Potter, Leslie S.: Flying clubs in England.

ENGLEMAN, FINIS E., and JULIA SALMON. Airways.
Boston, New York, D.C. Heath and Company, 1931, pp. vi, 180, ills.

ENGLISH, JOSEPH F. Air freedom: The second battle of the books.
Journal of Air Law, Vol. 2, No. 3 (July 1931), Chicago, pp. 356-371.

ENRIQUES, G. Lo spazio atmosferico nel diritto internazionale.
Estratto degli Annali dell' Università di Camerino. Roma, 1931.

ENTE. *See* Heinze, Edwin P. A.: Focke-Wulf canard monoplane.

- *See* Heinze, Edwin P. A.: The Focke-Wulf "Ente."
- *See* Kiel, Heinrich Georg: Static longitudinal stability of "Ente" airplanes.
- *See* Schulz, W. R.: A German "Canard" aeroplane. Some notes on the characteristics of the Focke-Wulf "Ente" with construction details.

ENTWISTLE, F. The meteorological aspects of gliding.
Journ. Roy. Aer. Soc., Vol. 35, No. 246 (June 1931), London, pp. 423-459, illus., diagrs.

EPSTEIN, PAUL S. Air resistance of high velocity projectiles.
Physical Review, Vol. 37, No. 2 (Jan. 15, 1931), Minneapolis, p. 233. (Abstract).

- On the air resistance of projectiles.
Proc. Nat. Acad. Sci., Vol. 17, No. 9 (Sept. 1931), Washington, pp. 532-547, diagrs.

EQUILIBRIUM. *See* Breithaupt, A. D.: Methods of maintaining the equilibrium of airships.

EQUIPMENT. *See* Hertel, Heinrich: *Steifigkeit, Festigkeit und Beanspruchung von An schnallgurten und Sesseln.*

ERB, FRITZ. *Strecke 22. (Stuttgart-Barcelona.)*
Luftschau, 4. Jahrg., Nr. 10 (10. März 1931), Berlin, pp. 34-35.

EREDIA, FILIPPO. *Sulla meteorologia delle rotte aeree.*
Riv. Aer., Anno 7, N. 9 (sett. 1931), Roma, pp. 485-496, diagrs.

— *Sulla meteorologia radiotelegrafica.*
Riv. Aer. Anno 7, N. 3 (marzo 1931), Roma, pp. 467-471, diagr.

ERICKSON, Ed. L., and WALTER B. HAWKINS. *Reduced-rate aircraft merchandising.*
Aviation, Vol. 30, No. 9 (Sept. 1931), New York, pp. 532-534.

ESCHKE, H. *See* Pfister, und Eschke: *Der Bau des Flugzeuges, Heft III. Der Rumpf.*

ESTIMATES. *See* Budgets.

ÉTÉVÉ. *Recherches et expériences sur le pilotage automatique.*
L'Aéronautique, 13me année, No. 143 (Avril 1931), Paris, pp. 117-121, ills.

ÉTÉVÉ, A. *Aviation.—Sur les Anémogirolettes.*
C. R. Acad. Sci., T. 193, No. 12 (21 sept. 1931), Paris, pp. 457-459.

ETHERTON, P. T. *By air to the Legion.*
Aeroplane, Vol. 40, No. 23 (June 10, 1931), London, pp. 1112, 1114, ills.

ETZDORF, MARGA VON. *Der hervorragende Tokio-Flug von Marga v. Etzdorf.*
Luftschau, 4. Jahrg., Nr. 18 (24 Sept. 1931), Berlin, p. 64, il.

— *Kiek in die welt; als deutsche fliegerin über drei erdteilen. Geleitwort von Prof. Dr. Hugo Junkers.*
Berlin, Union deutsche Verlagsgesellschaft, 1931, pp. 172, ills., maps.

EULA, ANTONIO. *Le nouveau tunnel a grande vitesse du ministère de l'aéronautique italienne.*
L'Aeronautique, 13me année, No. 142.
L'Aérotechnique, 9e année, No. 99 (mars 1931), Paris, pp. 98-99, ills.

— *Sui criteri di scelta dei profili alari.*
L'Aerotecnica, Vol. 11, N. 9 (sett. 1931), Roma, pp. 1069-1090, diagrs. Abstract in English, pp. 1168-1169.

— *Sul calcolo del momento torcente aerodinamico agente sulle pale delle eliche.*
L'Aerotecnica, Vol. 11, N. 11 (nov. 1931), Roma, pp. 1406-1420, diagrs., tabls. Abstract in English, p. 1490.

EUROPE. *Europeiskt nattpostflygnat.*
Flygning, Årg. 9, N: R:1 (Jan. 1931), Stockholm, pp. 5-7, diagr.

— *Mitteleuropa, unter mitwirkung der Deutschen Luft Hansa A.G., mit einem geleitwort von Erhard Milch.*
Leipzig, Bibliographisches Institut A.G., 1931, pp. xii, 544, maps. Myers Luftreisebücher.

— *See* Blankenburg: *Katapultflug über 1200 km.*

EVANS, FLOYD E. *The Michigan Board of Aeronautics.*
Aero Digest, Vol. 19, No. 4 (Oct. 1931), New York, pp. 44, 117.

EVANS, F. G. *The method of "least work" and the stressing of aeroplane structures.*
Journ. Roy. Aer. Soc., Vol. 35, No. 247 (July 1931), London, pp. 642-664.

EVERITT, P. F. Tables for use in aero navigation by astronomical methods.
Journ. Roy. Aer. Soc., Vol. 35, No. 242 (Feb. 1931), London, pp. 167-172.

EVERLING, E. Fliegerlatein oder Tatsachen.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 24. Heft (28. Dez. 1931), München und Berlin, pp. 717-719.

EVERLING, EMIL. Flugzeuglärm.
Forschungen und Fortschritte, 7. Jahrg. No. 15 (20. Mai 1931), Berlin, pp. 217-218.

— Luftrankheit.
Forschungen und Fortschritte, 7. Jahrg., Nr. 3 (20. Jan. 1931), Berlin, pp. 43-44.

EVERSON, WILLIAM G. Our National Guard Air Corps—nineteen squadrons strong.
Nat. Aer. Mag., Vol. 9, No. 4 (April 1931), Washington, pp. 25-28, illus.

EXHAUST manifolds. See Schey, Oscar W., and Alfred W. Young: A method for reducing the temperature of exhaust manifolds.

EXHIBITIONS. De waarde van luchtvaart-tentoonstellingen.
Het Vliegveld, 15de Jaarg., No. 2 (Feb. 1931), Amsterdam, pp. 51-52.

— See Klemin, Alexander: The National Aircraft Show.

— See Marolles, R. J. de: The twelfth Paris aero show.

— See Paris: Die Internationale Luftfahrtausstellung in Paris, November bis Dezember 1930.

EXPLORATION. See Balchen, Bernt: Aviation lessons of the Antarctic.

EXPORTS. See Love, Francis H.: Precedents to guide the aeronautical exporter.

— See Rea, Courts D.: 10 months' aircraft exports, 1930.

— See Rogers, Leighton W.: Analysis of aviation exports.

EYES. See McGrane, Lawrence H.: Eyes—How to correct them.

F

FABRICS. See Cleary, Charles J.: Fabrics in aviation. The characteristics and methods of testing of various textile materials examined and explained.

— See Łaski, Jarosław: Próby szycia płótna lotniczego.

FACHNORMENAUSSCHUSS FÜR LUFTFAHRT. Luftfahrt-Normen.
Berlin, Beuth-Verlag, 1931, pp. 7.

FAGE, A. Drag of circular cylinders and spheres.
Aer. Res. Comm., Rep. Mem., No. 1370 (Ae. 497-T. 2961), May 1930, London, 1931, pp. 6, diagrs., tabls.

FAGE, A., and J. H. WARSAP. The effects of turbulence and surface roughness on the drag of a circular cylinder.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 248-255, diagrs. Rep. Mem. No. 1283 (Ae. 429.).

FAGE, A., and V. M. FALKNER. An experimental determination of the intensity of friction on the surface of an aerofoil.
Aer. Res. Comm., Rep. Mem., No. 1315, (Ae. 470), April 1930, London, 1931, pp. 24, illus., diagrs., tabls.

FAGE, A., V. M. FALKNER, and W. S. WALKER. Experiments on a series of symmetrical Joukowski sections.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 322-340, ills., diagrs., tabls. Rep. Mem. No. 1241 (Ae. 396.)

FAGE, A., and V. M. FALKNER. Further experiments on the flow around a circular cylinder.
Aer. Res. Comm., Rep. Mem., No. 1369 (Ae. 496-T. 3062), February 1931, London, 1931, pp. 13, diagrs., tabls.

— Relation between heat transfer and surface friction for laminar flow.
Aer. Res. Comm., Rep. Mem., No. 1408 (Ae. 529-T. 3060), April 1931, London, 1931, pp. 30, ills., diagrs., tabls.

FAGG, FRED D. The state aeronautical regulation of 1930.
Journal of Air Law, Vol. 2, No. 2 (April 1931), Chicago, pp. 193-201.

FAIRBANKS, ANDREW J. Aeroplane performance prediction. A description of an empirical chart from which approximate characteristics may be estimated.
Aircraft Engineering, Vol. 3, No. 31 (Sept. 1931), London, p. 216, diagr.

FAIRBANKS, ROLLIN J. An American wind tunnel. A description, with a historical introduction of the 8-ft. tunnel at the University of Michigan.
Aircraft Engineering, Vol. 3, No. 28 (June 1931), London, pp. 147-148.

— A university wind tunnel. The Detroit single-return-flow open or closed experimental chamber tunnel described.
Aircraft Engineering, Vol. 3, No. 32 (Oct. 1931), London, p. 252, ills.

FAIREY. The Fairey (Napier) long range monoplane.
Flight, No. 1192, Vol. 23, No. 44 (Oct. 30, 1931), London, pp. 1082-1085, ills.

— See Coombes, L. P., and A. S. Crouch: The accelerations of a Fairey "Flycatcher" seaplane during aerobatic manœuvres.

FAIREY, C. R. Growth of aviation.
Journ. Roy. Aer. Soc., Vol. 35, No. 241 (Jan. 1931), London, pp. 4-28, diagrs.

FAIREY, M. C. R. Considérations sur avions de records et avions militaires.
L'Aérophile, 39e année, No. 10 (15 oct. 1931), Paris, p. 289.

FAIRTHORNE, R. A. Drag of flags.
Aer. Res. Comm., Rep. Mem., No. 1345, (Ae. 477-T. 2975), May 1930, London, 1931, pp. 5, diagrs., tabls.

— See Bradfield, F. B., and R. A. Fairthorne: Drag tests on full scale float of S. 5.

— See Bradfield, F. B., K. W. Clark, and R. A. Fairthorne: Maximum lift in closed and open jet tunnels.

— See Douglas, G. P., W. G. A. Perring, and R. A. Fairthorne: Wind tunnel tests with high tip speed airscrews. Experimental investigation of blade twist load.

— See Harris, R. G., L. E. Caygill, and R. A. Fairthorne: Wind tunnel experiments on steam condensing radiators.

— See Harris, R. G., L. E. Caygill, and R. A. Fairthorne: Wind tunnel tests on Gloster and Supermarine wing radiators.

FALCON FOUR. The "Falcon Four". A new and interesting twin-engined four-seater.
Flight, No. 1156, Vol. 23, No. 8 (Feb. 20, 1931), London, p. 156, ill.

FALKE. Das Segelflugzeug "Falke" der R. R. G.
Luftschau, 4. Jahrg., Nr. 9 (10. Mai 1931), Berlin, p. 68.

FALKENHAGEN, H. Klassische Hydrodynamik.
Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 1. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. 43-237, illus.

FALKNER, V. M., and SYLVIA W. SKAN. Some approximate solutions of the boundary layer equations.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 163-197, diagrs., tabls. Rep. Mem. No. 1314 (Ae. 457.)

FALKNER, V. M. *See* Fage, A., and V. M. Falkner: An experimental determination of the intensity of friction on the surface of an aerofoil.

— *See* Fage, A., V. M. Falkner, and W. S. Walker: Experiments on a series of symmetrical Joukowski sections.

— *See* Fage, A., and V. M. Falkner: Further experiments on the flow around a circular cylinder.

— *See* Fage, A., and V. M. Falkner: Relation between heat transfer and surface friction for laminar flow.

FARABOSCHI, ALBERTO. Esperimenti su eliche per tutti gli stadii di funzionamento e per diversi valori del rapporto passo diametro.
L'Aerotecnica, Vol. 11, No. 4 (aprile 1931), Roma, pp. 395-410, diagrs., tabls. English abstract pp. 500-501.

FARLEIGH, MINOR M. Principles and problems of aircraft engines.
New York, John Wiley and Sons, Inc., London, Chapman and Hall, Ltd., 1931, pp. xi, 277.
London, Chapman & Hall, Ltd., 1931, pp. xi, 277, illus., diagrs.

FARMAN. The Farman "Stratospheric" aeroplane.
Flight, No. 1174, Vol. 23, No. 26 (June 26, 1931), London, p. 572.

FARMING. Farming by airplane.
Western Flying, Vol. 10, No. 3 (Sept. 1931), Los Angeles, Cal., pp. 26-27.

FARNBOROUGH. *See* Dziewoński, Józef: Indykator elektropneumatyczny syst. "Farnsboro".

FASCIANELLI. *See* Musella, Francesco: Anemometrografo Fascianelli modello 1930.

FATIGUE. *See* Elasticity: Elasticity and fatigue.

— *See* Jenkin, C. F., and G. D. Lehmann: High frequency fatigue.

— *See* Wolski, Kazimierz: Nowoczesne próby na zmęczenie i opis maszyny Schenck'a zainstalowanej w IBTL.

FATUZZO, GIACOMO. Su una legge periodica delle precipitazioni mensili a Tripoli.
Riv. Aer., Anno 7, N. 11 (nov. 1931), Roma, pp. 306-315, diagrs.

FAUJAS, ALESSANDRO. Aeroplani e cannoni; riuniti l'anno IX e. f.; 1916-1930.
Sancasiano Pesa, tip. f. Ili Stanti, 1931, pp. 38, illus.

FAURE, PIERRE. Vers un nouveau Charleroi (la guerre aérienne de demain).
Paris, A. Redier, 1931, pp. 268.

FAURE-FAVIER, LOUISE. Deauville aérien.
L'Aérophile, 39^e année, No. 8 (15 août 1931), Paris, pp. 227-228, ill.

FAUVEL, CH. La navirègle.
L'Aérophile, 39^e année, No. 2 (15 fév. 1931), Paris, p. 55, ill.

FEDDEN, A. H. R. Air-cooled compression ignition engines (Moteurs d'aviation à huile lourde refroidis par l'air).
L'Aéronautique, 13^{me} année, No. 141 *Bulletin L'Aérotechnique*, 9^e année, No. 98 (fév. 1931), Paris, p. 59, diagrs.

— A memorandum on the design and development of the Bristol Mercury 1927 Schneider Trophy racing engine.
Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 328-332, ills.

FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE. Conférence de Bucarest 6-14 juin 1931.
Bull. Féd. Aér. Int., 12^e année, No. 46-47 (juil-oct. 1931), Paris, pp. 54-103, ills., port.

— Conférence de Bucarest du 8 au 15 juin 1931.
Bull. Féd. Aér. Int., 12^e année, No. 44 (jan. 1931), Paris, p. 3.

— Conférence de Bucarest du 6 au 14 juin 1931.
Bull. Féd. Aér. Int., 12^e année, No. 45 (avril 1931), Paris, pp. 33-35.

— Conférence extraordinaire de Paris 1er décembre 1930.
Bull. Féd. Aér. Int., 12^e année, No. 44 (jan. 1931), Paris, pp. 7-15, ill.

— De F. A. I.-conferentie te Bucarest 6-14 juni 1931.
Het Vliegveld, 15^{de} Jaarg., No. 7, 8 (Juli, Aug. 1931), Amsterdam, p. 250, 272-274.

— Informations, concernant la F. A. I.
Bull. Féd. Aér. Int., 12^e année, No. 45 (avril 1931), Paris, pp. 43-44.

— International air guide; the reference book on civil and commercial aviation. Air atlas. 1st ed. 1931.
Paris, Imprimerie Crété s. a. 1931, ills., maps, plans.

FÉDÉRATION NATIONALE AÉRONAUTIQUE. Le 2e Congrès de la Fédération nationale aéronautique. Paris, les 1er, 2 et 3 juin 1931.
L'Aérophile, 39^e année, No. 6 (15 juin 1931), Paris, pp. 182, 191.

FENDRICK, R. S. Paris to New York in 6 hours in mystery plane.
The Sunday Star (Magazine), Oct. 11, 1931, Washington, p. 16, ill.

FENNING, R. W., and F. T. COTTON. Experiments on the ignition of gases by sudden compression.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1145-1187, diagrs. *Rep. Mem. No. 1324.* (E. 36.)

FERRETTI, VIRGILIO. La guerra batteriologica.
Riv. Aer., Anno 7, n. 2 (feb. 1931) Roma, pp. 257-271.

— La guerra chimica e la difesa della popolazione civile.
Riv. Aer., Anno 7, N. 3 (marzo 1931), Roma, pp. 421-430.

— I ricoveri nella difesa collectiva antigas della popolazione civile.
Riv. Aer., Anno 7, n. 12 (dic. 1931), Roma, pp. 481-492.

FERRIS, E. M. Creating a municipal port.
Airway Age, Vol. 12, No. 2 (Feb. 1931), New York, pp. 159-162, ills.

FEUCHT, WALTER. *See* Seewald, Friedrich, und Walter Feucht: Versuchsfahrten mit einem schnellfahrenden Schienenfahrzeug mit Luftschaubenantrieb.

FEZZAN. *See* Italy: Colle ali d'Italia alla riconquista del Fezzan.

FIAT. *See* Diesel engines: Fiat Diesel-type engine.

FINANCING. *See* Bouman, L. F.: De financieele zijde van het luchthavenbedrijf.

FINANCING. *See* Stimson, Thomas E., Jr.: One third down. The chief obstacle to financing airplane sales is insurance. This and other problems are discussed in this article.

FINCH, VOLNEY CECIL. Preparing for aviation; an introductory course. New York, Simmons-Boardman Publishing Company, 1931, pp. vii, 458, ills., diagrs.

FINISHING. *See* Lewis, H. C.: Aircraft finishing of today.

— *See* McCutcheon, W. W.: Aircraft finishes.

FINLAND. Finlands insats vid Ilisutställningen. Flygning, Årg. 9, N: R 7 (Juli 1931), Stockholm, pp. 151, 153, ills.

FINN, E., and A. E. WOODWARD NUTT. Accelerations on aircraft during manœuvres.

Aer. Res. Comm., Rep. Mem., No. 1392 (Ae. 513-T. 3064), December 1930, London, 1931, pp. 5, ills., diagrs.

FINN, E. *See* Nutt, A. E. Woodward, A. F. Scroggs, and E. Finn: Range of aircraft with air-cooled radial engine using altitude control.

FINS. *See* Jones, R., and A. H. Bell: Biplane fins on a model of R. 101.

FIRE. Fire fighters in the air.

Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, Calif., p. 33, ill.

— Fire—What to do about it.

Western Flying, Vol. 9, No. 1 (Jan. 1931), pp. 72-74, ills.

— *See* Airports: That fire hazard.

— *See* Bouman, L. F.: Eenige persoonlijke ervaringen met brandblusapparaten in het luchthavenbedrijf.

— *See* Cost, R. W.: Minimizing fire hazards in airplane hangars.

— *See* Gassaway, Gordon: Fire fighting by air—another victory over the elements.

— *See* Glendinning, W. G.: Possible cause of aircraft fires on crash.

— *See* Kühn, Fritz: Erhöhung der Sicherheit von Luftfahrzeugen durch Bekämpfung der Brandgefahr.

— *See* Kühn, Fritz: Fire prevention on aircraft.

— *See* Montagnes, James: Patrol operation.

FISCHER, ARSENIUS. Zum Segelflugproblem.

Berlin, Verlag Klasing & Co. G. m. b. H., 1931, pp. 46, ills.

FISCHETTI, UGO. Il trasporto aereo di distaccamenti nelle retrovie avversaire.

Riv. Aer., Anno, 7, n. 11 (nov. 1931), Roma, pp. 316-318, map.

FISH. *See* Montagnes, James: Transport fish by airplane.

FISHER, GERHARD R. The way home.

Western Flying, Vol. 9, No. 3 (March 1931), Los Angeles, Calif., pp. 26-28, ills.

FISHER, JOACHIM. Ein Wendepunkt im Luftverkehr.

Die Umschau, 35. Jahrg., Heft 19 (9. Mai 1931), Frankfurt a. M., pp. 370-378, ills., ports.

FIXEL, ROWLAND W. The seadrome and international law.

Journal of Air Law, Vol. 2, No. 1 (Jan. 1931), Chicago, pp. 24-28.

FIXEL, ROWLAND W. Use of aircraft during martial law.
Air Law Review Vol. 2, No. 1 (Jan. 1931), New York, pp. 44-50.

FIZER. The Fizer "A.F.2." A new German "Pusher" two-seater.
Flight, No. 1168, Vol. 23, No. 18 (May 1, 1931), London, pp. 376-377, ills.

FLACHSBART, O. Luftschauben.

Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 3. Teil. Hydro- und Aerodynamik, Leipzig, Akademische Verlagsgesellschaft m. b. H., 1930, pp. 321-409, ills., diagrs.

FLAGS. *See* Fairthorne, R. A.: Drag of flags.

FLAME EXTINCTION. *See* Helmore, W.: Experiments on flame extinction in gaseous mixtures.

FLANDERS, L. HOWARD. The flight conditions of gliders.

Flight, No. 1150, Vol. 23, No. 2 (Jan. 9, 1931), London, pp. 34-35, diagrs.

FLAPS. *See* Soulé, Hartley Akin: The effect of slots and flaps on the lift and drag of the McDonnell airplane as determined in flight.

FLAT SPIN. *See* Fuchs, Richard, and Wilhelm Schmidt: The dangerous flat spin and the factors affecting it.

FLETTNER. *See* Homberger, E.: Flugzeug mit Flettnerrotor.

FLETTNER, ANTON. *See* Savonius, S. J.: The S-rotor.

FLOATS. *See* Collins, A. R.: A formula for the buoyancy of the wing floats of flying boats and single float seaplanes.

— *See* Lockheed: The installation of floats on Colonel Lindbergh's special Lockheed Sirius.

— *See* Seewald, Friederich: On floats and float tests.

— *See* Seewald, Friedrich: Über Schwimmer und Schwimmerversuche.

FLORMAN, B. Den stora Italienske eskaderflygningen.

Flygning, Årg. 9, N:o 2 (Febr. 1931), Stockholm, pp. 37-39, ills.

FLORMAN, CARL. Night air mails.

Flight, No. 1160, 1161, Vol. 23, No. 12, 13 (March 20, 27, 1931), London, pp. 255-259, 273-277, diagrs., maps.

Journ. Roy. Aer. Soc., Vol. 35, No. 246 (June 1931), London, pp. 460-488, diagrs., maps.

FLOW. Air flow.

Flight, No. 1199, Vol. 23, No. 51 (Dec. 18, 1931), London, pp. 1243-1246, ills.

— *See* Fage, A., and V. M. Falkner: Further experiments on the flow around a circular cylinder.

— *See* Lagally, M.: The frictionless flow in the region around two circles.

— *See* Szymański, Piotr: Ecoulement plan du fluide à travers une palissade de segments rectilignes.

— *See* Thom, A.: Experiments on the flow past a rotating cylinder.

FLOWMETERS. *See* Kerr, P. S.: Fuel flowmeters designed to measure mass flow.

FLOYD SMITH AERIAL EQUIPMENT CO. *See* Irving Air Chute Co., inc., and Floyd Smith Aerial Equipment Co.: Claims of patents for parachute are adjudged valid and infringed.

FLUID flow. *See* Cope, W. F.: Heat transmission between surfaces and fluids flowing over them. (1) The case of two-dimensional flow.

— *See* Taylor, G. I.: Some cases of flow of compressible fluids.

FLUID motion. *See* Bénard, Henri: Nouvelles installations pour l'étude des sillages à l'Institut de Méchanique des Fluides.

— *See* Fage, A., and J. H. Warsap: The effects of turbulence and surface roughness on the drag of a circular cylinder.

— *See* Green, J. J.: The viscous layer associated with a circular cylinder.

— *See* Johansen, F. C.: Flow through pipe orifices at low Reynolds numbers.

— *See* MacCreadie, William Thomas: On the stability of the motion of a viscous fluid.

— *See* National Physical Laboratory: National Physical Laboratory. Aerodynamics Department. Wind tunnel design. Fluid Motion.

— *See* Vasilescu, Florin: Méchanique des Fluides.—Sur une méthode de M. Riabouchinsky ayant pour but de résoudre le problème de Dirichlet en vue du calcul du potentiel des vitesses.

— *See* Weinstein, A.: Meccanica.—Sur le mouvement d'un fluide à travers un barrage perméable.

FLUTTER. Flutter.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 35-38.

— *See* Vibration.

FLYABOUT. *See* Nichols, P. W.: The Alexander Flyabout.

FLYING. Fallschirm, Flugzeug, Zeppelin.

Stuttgart, Francksche Verlagshandlung, 1931, pp. 80, ills.

— *See* Piloting.

FLYING schools. *See* Hann, George R.: Approved versus unapproved flying schools.

FOCKE, H. Le principe du "canard" et ses avantages.

L'Aéronautique, 13me année, No. 144, Bulletin L'Aérotechnique, 9e année, No. 101 (mai 1931), Paris, pp. 165-169, ills.

FOCKE-WULF. Le "Canard" bimoteur Focke Wulf (Allemagne).

L'Aérophile, 39e année, No. 2 (15 fév. 1931), Paris, p. 56, ills.

— Focke-Wulf A38 "Möwe."

Flight 1182, Vol. 23, No. 34 (Aug. 21, 1931), London, pp. 843-945, ills.

— Il "Focke-Wulf" Ente 19.

Riv. Aer., Anno 7, n. 1 (gen. 1931), Roma, pp. 151-153, ills.

— Focke-Wulf F 19a "Ente" commercial airplane (German). A tail-first high-wing monoplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 132, Jan. 23, 1931, Washington, January 1931, pp. 9, ills.

— *See* Heinze, Edwin, P. A.: Focke-Wulf canard monoplane.

— *See* Heinze, Edwin P. A.: The Focke-Wulf "Ente."

FOPPL, OTTO. *Grundzüge der technischen Schwingungslehre.*
Berlin, Springer, 1931, pp. 212, ills.

FOG. *Landning i dimma med radiotekniska hjälpmittel.*
Flygning, Årg. 9, N:R 9 (Sept. 1931), Stockholm, pp. 173-175, ill., diagrs.

— *See* Adie, A. M.: *The commercial importance of fog control.*

— *See* Anderson, S. Herbert: *Fog penetration.*

— *See* Boone, Andrew R.: *Recent developments in radio fog flying.*

— *See* Breckenridge, F. C.: *Transmission of light through fog. An attempt to correlate the results of air investigations made in U.S.A. in recent years.*

— *See* Coontz, John L.: *Echo conquers fog for flyers.*

— *See* Dobler, Martin L.: *The menace of fog.*

— *See* Meredith, F. W.: *Air transport in fog.*

— *See* Mounier, P. J. J.: *Mistbestrijdung.*

— *See* Stratton, J. A., and H. G. Houghton: *A theoretical investigation of the transmission of light through fog.*

FOGG, ROBERT S. *Money-making seaplane operation.*
Aero Digest, Vol. 19, No. 1 (July 1931), New York, pp. 48, 136, ills.

FOGMAN, ERNST. *See* Vitt, Leonard: *Ernst Fogman 50 år.*

FOKKER. *The Fokker F.XII. 3 Pratt & Whitney "Wasp" engines.*
Flight, No. 1155, Vol. 23, No. 7 (Feb. 13, 1931), London, pp. 132-134, ills.

— *See* Mono-spar: *Monospar wing for Fokker F.VII-3 M.*

FOKKER AIRCRAFT CORPORATION OF AMERICA. *[Manual of Fokker, Model F-14, mail plane].*
New York, 1931, pp. 19, ills.

FOKKER, ANTHONY HERMAN GERARD, and BRUCE GOULD. *Flying Dutchman; the life of Anthony Fokker.*
New York, H. Holt and Company, 1931, pp. 282, ills.

FOKKER, ANTHONY HERMAN GERARD. *See* Mayo, William B., and Anthony H. G. Fokker: *Metal vs. wood. Large metal airplanes*, by William B. Mayo.
An answer to Mr. Mayo, by Anthony H. G. Fokker.

FOMBEURE, G. *L'altération du sens des couleurs.*
L'Aérophile, 39e année, No. 5 (15 mai 1931), Paris, pp. 152-153.

FORBES, ALEXANDER. *Observations on gliding angles.*
Aviation, Vol. 30, No. 6 (June 1931), New York, pp. 355-356, ill.

FORD. *De drie-motorige Ford 5-AT-C.*
Het Vliegveld, 15de Jaarg., No. 10 (Oct. 1931), Amsterdam, p. 369, ill.

— *See* National Air Transport: *N.A.T.—Ford wing mail compartments.*

FORESTRY. *See* Bohrer, Walt: *Forest patrol in the Pacific northwest.*

— *See* Gassaway, Gordon: *Air patrol.*

— *See* Randall, C. E.: *The airplane aids the forester.*

FORLANINI. *Le nouveau dirigeable Forlanini "Omniadir."*
L'Aéronautique, 13me année, No. 150 (nov. 1931), Paris, p. 384, ills.

FORT RILEY, KANSAS. Other arms air corps. Academic division, the Cavalry School, Fort Riley, Kansas, 1931-1932.
 [Ft. Riley, Q.M.C. plant, 1931] pp. 90, diagrs.

FORZA, ERNESTO. Catapultamento di velivoli da nave in mare ondoso.
 Riv. Aer., Anno 7, N. 6 (giugno 1931), Roma, pp. 424-436, ills.

FOSTER, H. H. *See* Spanogle, J. A., and H. H. Foster: Basic requirements of fuel-injection nozzles for quiescent combustion chambers.

— *See* Spanogle, J. A., and H. H. Foster: Fuel injection of Diesel engines.

FOWLER, HARLAN D. Variable lift.

Western Flying, Vol. 10, No. 5 (Nov. 1931), Los Angeles, Cal., pp. 31-33, ills., diagrs.

— Why not more freight by air?

Western Flying, Vol. 9, No. 4 (April 1931), Los Angeles, Cal., pp. 34-36, ill.

FRAGALI, MICHELE. Principi di diritto aeronautico.

“Cedam” Casa Editrice Dottore Antonio Milani. Padova, già Litotipo, 1930, Anno VIII.

FRAGAPANE, G. *See* Gallo, G., e G. Fragapane: Leghe alluminio-cromo.

FRAMEWORK. *See* Cassens, J.: Systematischer Gewichtsvergleich an räumlichen Fachwerken.

— *See* Ebner, Hans: Die Berechnung regelmässiger, vielfach statisch unbestimmter Raumfachwerke mit Hilfe von Differenzengleichungen.

— *See* Seydel, Edgar: Beitrag zur Berechnung viergürtiger Flechtwerke.

FRANCE. L'aéronautique militaire, maritime, coloniale et marchande; ouvrage publié sous le haut patronage et avec la collaboration rédactionnelle et documentaire du Ministère de l'air.

Paris, M. & J. de Brunoff, 1931, pp. 490, ills.

— Frankreich. Verordnung über Sperrgebiete sowie Benutzung und Beförderung von Lichtbildgerät in den französischen Kolonien.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 45-46 (14. Nov. 1931), Berlin, pp. 331-332.

— Misslungenen französische Weltrekordflüge.

Luftschau, 4. Jahrg., Nr. 18 (24. Sept. 1931), Berlin, pp. 64-65, ill.

— Nouveaux appareils française de tourisme.

L'Aéronautique, 13me année, No. 148 (sept. 1931), Paris, pp. 314-320, ills.

— IV^e Tableau industriel de l'aéronautique Française. La direction générale technique due Ministère de l'Air. La chambre syndicale des industries aéronautiques. Aéronefs. Moteurs. Équipements.

L'Aéronautique, 13me année, No. 151 (déc. 1931), Paris, pp. 405-438, ills., tabls.

— Tendenze attuali dell'aviazione commerciale in Francia.

Riv. Aer., Anno 7, N. 12 (dic. 1931), Roma, pp. 587-615, ills., diagrs.

— *See* Bouilloux-Lafont, Claude: L'aviation commerciale en France; son histoire—son état actuel—son influence sur la vie économique.

— *See* Fendrick, R. S.: Paris to New York in 6 hours in mystery plane.

— *See* Ide, John Jay: The French Air Ministry.

— *See* Lamarche, Paul E.: Endurance monoplanes of France.

FRANCE. MINISTÈRE DE L'AIR. Aéronautique nationale. Notice sur la manœuvre des objectifs aériens remorques.

Paris, Imp. Nationale, 1931.

FRANCE. MINISTÈRE DE L'AIR. L'effort aérien colonial français. Plaquette éditée par le Ministère de l'Air à l'occasion de sa participation à l'Exposition Coloniale Internationale.

Paris, 1931, ills., diagrs., tabls.

— Nomenclature des ouvrages de la bibliothèque.

[Paris, Ministère de l'Air] Bureau Central des Renseignements, 1931, pp. 64.

— Les problèmes de la sécurité aérienne et les réalisations françaises. Plaquette éditée en 1931 par le Ministère de l'Air à l'occasion de sa participation officielle au dernier Salon de l'Aéronautique.

Paris, 1931, ills., diagrs., tabls.

FRANCHETTI, G. La situation des assurances "aviation."

L'Aérophile, 39e année, No. 5 (15 mai 1931), Paris, p. 129.

FRANCIS, ROY N. Economic airport operation.

Aero Digest, Vol. 18, No. 4 (April 1931), New York, pp. 190-191, ill.

FRANCIS, WARREN B. Aeronautics and the last session of Congress.

U.S. Air Services, Vol. 16, No. 4 (April 1931), Washington, pp. 44-45.

FRANCIS, W. E. *See* Pippard, A. J. Sutton, and W. E. Francis: The stresses in a radially spoked wire wheel under loads applied to the rim.

— *See* Pippard, A. J. Sutton, and W. E. Francis: Stresses in wired wheels.

FRANKLIN, BENJAMIN. The ingenious Dr. Franklin; selected scientific letters of Benjamin Franklin, edited by Nathan G. Goodman.

Philadelphia, University of Pennsylvania Press; London, H. Milford, Oxford University Press, 1931, pp. xi, 244, ills., diagrs.

p. 89: First hydrogen balloon.

p. 94: A hot air balloon.

p. 96: First aerial voyage by man.

p. 99: Second aerial voyage by man.

pp. 103-105: A prophecy on aerial navigation.

FRANQUINET, E. Is binnenlandsch luchtverkeer in Nederland in de naaste toekomst mogelijk?

Het Vliegveld, 15de Jaarg., No. 10 (Oct. 1931), Amsterdam, pp. 355-358.

FRANZ, G. Der Voith-Schneider-Antrieb. Ein neuartiger Schiffspropeller.

Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 27 (4. Juli 1931), Berlin, pp. 873-876, ills.

FRASER, CHELSEA CURTIS. The model aircraft builder.

New York, Thomas Y. Crowell Company, 1931, pp. xi, 384, ills., diagrs.

FRASER, M. S. The engine that flew around the world.

National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, pp. 15-16, 66, ills.

FREEMAN, HUGH BARTON. Comparison of full-scale propellers having R.A.F.-6 and Clark Y airfoil sections.

National Advisory Committee for Aeronautics, Report No. 378, June 17, 1931, Washington, U.S. Government Printing Office, 1931, pp. 20, ills., diagrs., tabls.

— The effect of small angles of yaw and pitch on the characteristics of airplane propellers.

National Advisory Committee for Aeronautics, Report No. 389, July 29, 1931, Washington, U.S. Government Printing Office, 1931, pp. 11, ills., diagrs., tabls.

FREEMAN, WILLIAM MARSHALL. Air and aviation law (civil aviation) being an exposition of the statute and case law affecting air navigation.

London, New York, Sir I. Pitman & Sons, Ltd., 1931, pp. xi, 163, ills.

FREEZING ALTITUDE. *See* Brennan, J. F.: A method of determining the altitude in the atmosphere above sea level where the freezing point of water occurs.

FREIGHT CARRIERS. *See* Bree, J. de: *Het Jumbo-vrachtvliegtuig der K.L.M.*

- *See* Fowler, Harlan D.: *Why not more freight by air?*
- *See* Germany: *A German freight-carrier. A description of the new Junkers Ju. 52 with B.M.W. VII or Leopard engine.*
- *See* Heinze, Edwin P. A.: *German transport airplanes.*
- *See* Junkers: *Un avion de fret long-courrier; le Junkers Ju. 52.*
- *See* Junkers: *A flying lorry.*
- *See* Rathert, G. A.: *An efficiency formula for cargo airplanes.*
- *See* Woltereck, Hans: *“Fliegende Güterwagen.”*

FRENCH, JOSEPH LEWIS. *Wings over the world*, edited by Joseph Lewis French; introduction by Capt. Frank M. Hawks.
Springfield, Mass., McLoughlin Bros., 1931, pp. 303, ills.

FRENCH, NED. *Deeble duplex engine.*

Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, p. 76, ills.

FRERI, PROSPERO. *L'impiego del paracadute nelle guerre future.*
Riv. Aer., Anno 7, N. 12 (dic. 1931), Roma, pp. 463-465.

FRICKE, HERMAN. *Fluglehre I (Bewegung).*

Oldenburg i.D., Druck und Verlag von Gerhard Stalling, 1931, pp. 40, ills., diagrs.

FRictionless FLOW. *See* Legally, M.: *The frictionless flow in the region around two circles.*

FRITSCHE, CARL. *The metalclad airship.*

Aeroplane, Vol. 40, No. 20 (May 20, 1931), London, pp. 920, 922, 924, 926, 928, ills.

FRITSCHE, CARL B. *The metalclad airship.*

Flight, No. 1169, 1170, Vol. 23, No. 21, 22 (May 22, 29, 1931), London, pp. 461-464, 483-487, ills.

Journ. Roy. Aer. Soc., Vol. 35, No. 249 (Sept. 1931), London, pp. 818-883, ills.
London, The Royal Aeronautical Society, 1931, pp. 69, ills.
Aeronautical Reprints, No. 61.

FROESCH, CHARLES. *Servicing for operators.*

Airway Age, Vol. 13, No. 10 (Sept. 5, 1931), New York, pp. 205-206.

FUCHS, OTTO. *Segelflug in der Ebene.*

Luftschau, 4. Jahrg., Nr. 11 (10. Juni 1931), Berlin, p. 84.

FUCHS, RICHARD, and WILHELM SCHMIDT. *The dangerous flat spin and the factors affecting it.*

National Advisory Committee for Aeronautics, Technical Memorandums No. 629, July 16, 1931, Washington, July 1931, pp. 39, ills.

- *The dangerous sideslip of a stalled airplane and its prevention.*

National Advisory Committee for Aeronautics, Technical Memorandums No. 638, Sept. 17, 1931, Washington, September 1931, pp. 16, diagrs.

- *Das gefährliche seitliche Kippen eines Flugzeuges über den Flügel und seine Beeinflussung.*

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 13. Heft (14. Juli 1931), München und Berlin, pp. 393-400, ill., diagrs.

- *The steady spin.*

National Advisory Committee for Aeronautics, Technical Memorandums No. 630, July 23, 1931, Washington, July 1931, pp. 27, ills., diagrs.

FUCINI, MARIO. Alcuni aspetti del problema degli armamenti aerei.
Riv. Aer., Anno 7, N. 1 (gen. 1931), Roma, pp. 16-37.

— Il compito di contro-aviazione. Caccia o bombardamento?
Riv. Aer., Anno 7, N. 4 (aprile 1931), Roma, pp. 9-22.

FUEL. *See* Haifter, Mitchel: Fuel systems.

— *See* Mokrzycki, Gustaw Andrzej: Pewne zagadnienie lotu na wysokość.

FUEL INJECTION. *See* Gelalles, A. G., and E. T. Marsh: Effect of orifice length-diameter ratio on the coefficient of discharge of fuel-injection nozzles.

— *See* Gerrish, Harold C., and Fred Voss: Investigation of the discharge rate of a fuel-injection system.

— *See* Rothrock, Addison M., and E. T. Marsh: The effect of injection-valve opening pressure on spray-tip penetration.

— *See* Spanogle, J. A., and H. H. Foster: Basic requirements of fuel-injection nozzles for quiescent combustion chambers.

— *See* Spanogle, J. A., and G. T. Hemmeter: Development of an impinging-jet fuel-injection valve nozzle.

FUEL-LINE. *See* Bridgeman, O. C., C. A. Ross and H. S. White: Airplane fuel-line temperature.

FUEL SPRAYS. *See* Galalles, Achilles George: Effect of orifice length-diameter ratio on fuel sprays for compression-ignition engines.

— *See* Rothrock, Addison M.: Effect of high velocities on the distribution and penetration of a fuel spray.

— *See* Rothrock, Addison M.: The N.A.C.A. apparatus for studying the formation and combustion of fuel sprays and the results from preliminary tests.

— *See* Rothrock, Addison M., and E. T. Marsh: Penetration and duration of fuel sprays from a pump injection system.

— *See* Rothrock, Addison M., and C. D. Waldon: Some characteristics of fuel sprays at low-injection pressures.

FUELS. Where fuel distribution becomes a major problem.

Aviation, Vol. 30, No. 8 (Aug. 1931), New York, p. 483, ill.

— *See* Banks, F. Rodwell: Fuel quality.

— *See* Brown, George Granger: The volatility of motor fuels.

— *See* Clothier, W. C.: Carburetter fuel metering characteristics.

— *See* Edgar, Graham: High temperature knock testing.

— *See* Gasoline: Aviation gasoline.

— *See* Graves, W. H.: Aircraft Diesel engine fuels.

— *See* Helmore, W.: Engine performance with gaseous fuels. Part I—Characteristics and engine performance of gaseous fuels obtained from oil.

— *See* King, R. O. and H. Moss: Detonation, mineral lubricating oils and blended fuels.

FUELS. *See* Mardles, R.: Oxidation characteristics of fuel vapours with regard to engine detonation.

— *See* Peter, Franciszek, Stanisław Olszewski, Józef Dziewoński, i Hubert Krasiński: Badania nad zastosowaniem mieszanki alkoholowej do silnika Lorraine-Deitrich 450 KM.

— *See* Tell, William K.: Taxation of aircraft motor fuel.

— *See* Tett, H. C.: Fuels and modern methods of testing.

FUKUT, SIN-ICHI. *See* Alloys: Über die Herstellung und die mechanischen Eigenschaften der Al-Cu-Si Legierungen.

FULLER, J. F. C. *See* Inter-parliamentary Union: What would be the character of a new war? Enquiry organised by the Inter-parliamentary Union.

FULTON, GARLAND. Airship development.

Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 29-30, il.

FUNNELL, C. L. Notes on meeting the public.

Aviation, Vol. 30, No. 2 (Feb. 1931), New York, p. 110.

FUSELAGE. *See* Crusader: Test sections of fuselage of Short Crusader.

— *See* Ebner, Hans: Die Berechnung regelmässiger, vielfach statisch unbestimmter Raumfachwerke mit Hilfe von Differenzengleichungen.

— *See* Hartshorn, A. S.: Fuselage interference effect.

— *See* Hartshorn, A. S.: The influence of a fuselage on the lift of a monoplane.

— *See* Muttray, H.: Widerstand und Kühlwirkung eines Flugzeugrumpfes mit verschieden angeordnetem Kühler.

— *See* Pfister, E. und H. Eschke: Der Bau des Flugzeuges. Heft III. Der Rumpf.

— *See* Rhode, Richard V., and Eugene E. Lundquist: Pressure distribution over the fuselage of a PW-9 pursuit airplane in flight.

— *See* Seydel, Edgar: Beitrag zur Berechnung viergurtiger Flechtwerke.

— *See* Supermarine: Supermarine S. 5 fuselage proof load tests.

G

G-AAZK. Technical report by the Accidents Investigation Sub-Committee on the accident to the aeroplane G-AAZK at Meopham, Kent, on 21st July, 1930.

Aer. Res. Comm., Rep. Mem., No. 1360, January 1931, London, 1931, pp. 92, ills., diagrs.

GABRIELLI, G. Problemi moderni nella costruzione metallica degli aeroplani.

L'Aerotecnica, Vol. 11, N. 1 (gen. 1931), Roma, pp. 7-49, ills., diagrs., tabls.
English abstract pp. 143-144.

GAEDE, W. Luftpumpen.

Wien W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 3. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1930, pp. 411-461, ills., diagr., tabl.

GALBRUN, HENRI. Propagation d'une onde sonore dans l'atmosphère et théorie des zones de silence.

Paris, 1931, pp. x, 352, ills. Inst. mécan. des fluides de l'Univ. Paris,

GALLO, G., e G. FRAGAPANE. Leghe alluminio-cromo.
L'Aerotecnica, Vol. 11, N. 12 (dic. 1931), Roma, pp. 1539-1554, ills., diagrs., tabls.

GAMBIOLI, MARIO. Apparecchi per prove pratiche di corrosione dei metalli.
Riv. Aer., Anno 7, N. 11 (Nov. 1931), Roma, pp. 297-305, ills.

GAMBLE, CHARLES FREDERICK SNOWDEN. See Snowden Gamble, Charles Frederick.

GARCIA, GONZALO. Problemas jurídicos que la aviación plantea.
Buenos-Ayres, 1931.

GARNER, H. M., and L. P. COOMBES. The determination of the water resistance of seaplanes.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1321-1330, diagrs., tabl. Rep. Mem. No. 1289. (Ae. 438.)

GARRATT, GEORGE A. The mechanical properties of wood; including a discussion of the factors affecting the mechanical properties, working stresses for structural timber, and methods of timber testing.
New York, John Wiley and Sons, Inc., London, Chapman and Hall, Ltd., 1931, pp. ix, 276.

GARSAUX, PAUL. Les examens médicaux et la navigation aérienne.
L'Aérophile, 39e année, No. 3 (15 mars 1931), Paris, p. 65.

GARUFFA, EGIDIO. Aviazione moderna; studio aerodinamico degli aeroplani ed idrovolanti, loro calcolazione et costruzione, la costruzione aviatoria in Italia.
Torino, Unione Tipografico—editrice Torinese, 1931, pp. viii, 579, ills., diagrs.

GAS. See Busemann, A.: Gasdynamik.

GASES. See Eason, Alec B.: Flow and measurement of air and gases.

— See Stevens, Frederick Wiley: The gaseous explosive reaction—the effect of pressure on the rate of propagation of the reaction zone and upon the rate of molecular transformation.

GASOLINE. Aviation gasoline. (Material branch report.)
Air Corps Information Circular, Vol. 7, No. 660 (Aug. 25, 1931), Washington, United States Government Printing Office, 1931, pp. 2.
Air Corps Technical Report No. 3492.

GASOLINE TANKS. See Theodorsen, Theodore, and William C. Clay: The prevention of ice formation on gasoline tank vents.

GASPERI, MARIO. Il progresso nell'autonomia degli aeroplani.
L'Aerotecnica, Vol. 11, N. 10 (ott. 1931), Roma, pp. 1221-1240.
Abstract in English pp. 1337-1338.

GAZZAWAY, GORDON. Air patrol.
Western Flying, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Calif., pp. 29-31, ills.

— Firefighting by air—another victory over the elements.
Airway Age, Vol. 12, No. 5 (May 2, 1931), New York, pp. 455-456, ills.

GASSNER, A. A. The economic aspects of transport plane design.
Aviation, Vol. 30, No. 10 (Oct. 1931), New York, pp. 583-587, diagrs., tabls.

— Transport planes for profit.
Aviation, Vol. 30, No. 12 (Dec. 1931), New York, pp. 702-706, diagrs., tabls.

GASTALDI, CAMILLO. La cina ed il problema delle sue comunicazioni.
Riv. Aer., Anno 7, N. 8 (agosto 1931), Roma, pp. 223-242, maps.

GASTOU, R. L'hélice aérienne; à pas constant, à pas variable.
Paris, F. L. Vivien, 1930, 2 vols, ills., diagrs.

GATES, S. B. Measured spins on aeroplane H.

Aer. Res. Comm., Rep. Mem., No. 1403 (Ae. 524-Spin 61), April 1931, London, 1931, pp. 5, diagrs.

— See Batson, A. S., H. B. Irving, and S. B. Gates: Spinning experiments on a single seater fighter. Part I.—Further model experiments, by A. S. Batson and H. B. Irving; Part II.—Full scale spinning tests, by S. B. Gates.

— See Hardy, J. K., and K. V. Wright: The automatic timing of aircraft over a speed course.

GATTY. See Weems, Philip Van Horn: The Gatty ground speed and drift indicator.

GATTY, HAROLD. See Post, Wiley, and Harold Gatty: Around the world in eight days; the flight of the Winnie Mae.

GAY, ALBERT PIERRE. Recherches sur l'hydrodynamique des liquides visqueux.

Paris, E. Blondel La Rougery, 1931, pp. 126

Services Techniques et Industriels de l'Aéronautique, Publications Scientifiques et Techniques, No. 2. Préface de M. Henri Villat.

GEARS. See Control: A relief gear for the pilot. A device for reducing the load on the controls by permanently off-setting the rudder.

— See Wolski, Kazimierz: Przyczynek do wytrzmałości przekładni zębatach helikoidalnych.

GEDDES, ERIC. Air transport. Sir Eric Geddes on the future.

Flight, No. 1155, 1156 Vol. 23, No. 7, 8 (Feb. 13, 20, 1931), London, pp. 142-144, 163-164, ills.

GEERLIGS, BERT PRINSEN. Een praatje met Mevrouw Roosje Kölér.

Het Vliegveld, 15de Jaarg., No. 7 (Juli 1931), Amsterdam, pp. 230-231, port.

GEHLEN, KARL. Nachruf. Theodore Kober.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 2. Heft (28. Feb. 1931), München und Berlin, p. 37, port.

GELALLES, ACHILLES GEORGE. Coefficients of discharge of fuel injection nozzles for compression-ignition engines.

National Advisory Committee for Aeronautics, Report No. 373, March 31, 1931, Washington, U.S. Government Printing Office, 1931, pp. 19, ills., diagrs.

— Effect of orifice length-diameter ratio on fuel sprays for compression-ignition engines.

National Advisory Committee for Aeronautics, Report No. 402, Jan. 20, 1932, Washington, U.S. Government Printing Office, 1931, pp. 14, ills., diagrs., tabl.

GELALLES, ACHILLES GEORGE and E. T. MARSH. Effect of orifice length-diameter ratio on the coefficient of discharge of fuel-injection nozzles.

National Advisory Committee for Aeronautics, Technical Notes No. 369, March 31, 1931, Washington, March 1931, pp. 15, diagrs., tabl.

GENERATORS. Windmills for aircraft generators. The manufacture and wind-tunnel testing of a centrifugally operated variable-pitch type.

Aircraft Engineering, Vol. 3, No. 28 (June 1931), London, p. 144, ills.

GENZINI, CARLO. L'aeroplano da caccia offensiva.

Riv. Aer., Anno 7, n. 11 (nov. 1931), Roma, pp. 293-296.

— Le armi sugli aeroplani.

Riv. Aer., Anno 7, n. 7 (luglio 1931), Roma, pp. 18-29, diagr., tabls.

GEORGE, H. S. The cause and prevention of heat cracks in aircraft welding. A study of localized stresses.
Mech. Eng., Vol. 53, No. 6 (June 1931), New York, pp. 433-439, ills.

GEORGII, WALTER. Bericht über den 11. Rhön-Segelflug-Wetbewerb.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 5. Heft (14. März 1931), München und Berlin, pp. 129-140, ills., tabls., diagrs.

— Eleventh Rhön soaring-flight contest.
National Advisory Committee for Aeronautics, Technical Memorandums No. 623, June 4, 1931, Washington, June 1931, pp. 16, diagrs., maps, tabls.

— Ten years' gliding and soaring in Germany.
Annual Report, Smithsonian Institution 1930, Washington, 1931, pp. 273-283, ills. Lecture delivered before the Royal Aeronautical Society, London, on February 19, 1930.

— Veröffentlichungen des Forschungs-Instituts der Rhön-Rossitten-Gesellschaft e. V. Nr. 4: Jahrbuch 1929 und Abhandlungen der I. Wissenschaftlichen Segelflugtagung.
München und Berlin, Verlag R. Oldenbourg, 1931, pp. xvi, 132, ills.

GERARD, I. J. A method of testing the strength of aircraft hulls.
Aer. Res. Comm., Rep. Mem., No. 1398 (Ae. 519-T. 3068), November 1930, London, 1931, pp. 7, ills., diagr., tabls.

— The primary importance of mechanical testing in aircraft construction.
Journ. Roy. Aer. Soc., Vol. 35, No. 247 (July 1931), London, pp. 579-608, ills.

GERIN. L'avion Gerin à surface variable.
L'Aérophile, 39e année, No. 2 (15 fév. 1931), Paris, pp. 52-54, ills., diagrs.

GERMANY. De ballonsport in Duitschland.
Het Vliegveld, 15de Jaarg., No. 7 (Juli 1931), Amsterdam, pp. 251-252, ills.

— Berlin-Hannover-Westgrenze, Luftfahrtfeuer.
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 13-14 (4. April 1931), Berlin, pp. 80-89, maps.

— Betriebsordnung für den internationalen Flugwetterdienst mit deutschen Ausführungsbestimmungen.
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 47-48, 49-50 (28. Nov., 12. Dez. 1931), Berlin, pp. 337-348, 349-358.

— Deutsche Luftfahrtwerbewoche 1931.
Luftschau, 4. Jahrg., Nr. 11, 13 (10. Juni 10. Juli, 1931), Berlin, p. 82, 7.

— Der Deutsche Lufthaushalt 1931.
Luftschau, 4. Jahrg., Nr. 3 (10. Feb. 1931), Berlin, pp. 18-19.

— Deutschland. Darmstadt, Flughafen. Nurnberg Fürth, Flughafen. München-Oberwiesenfeld, Flughafen. Wilhelmshaven, Wasserflughafen. Warnemünde, Schiessübungen. Spreenhagen, Schiessübungen. Meppen, Schiessübungen. Kolberg, Schiessübungen. Tenkitten (Ostpr.), Schiessübungen. Nürnberg, Schiessübungen. Ungültigkeit einer Genehmigung. Ungültigkeit von Genehmigungen. Klasseneinteilung von Flugzeugen.
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 6-7 (14. Feb. 1931), Berlin, pp. 33-35.

— The "Deutschlandflug," 1931.
Flight, No. 1182, Vol. 23, No. 34 (Aug. 21, 1931), London, pp. 832-833, ills.

— Der Deutschlandflug 1931.
Luftschau, 4. Jahrg., Nr. 16 (24. Aug. 1931), Berlin, pp. 37-40.

— A German freight-carrier. A description of the new Junkers Ju. 52 with B. M. W. VII or Leopard engine.
Aircraft Engineering, Vol. 3, No. 33 (Nov. 1931), London, pp. 291-292, ills.

GERMANY. Gesetz zu dem Abkommen zwischen dem Deutschen Reich und Grossbritannien über Änderung des Luftverkehrsabkommens vom 29. Juni 1927. Vom 31. März 1931.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 24 (13. Juni 1931), Berlin, pp. 165-166.

— Ein halbes Jahrhundert deutscher Luftfahrt. Zum 50 jährigen Jubiläum des Berliner Vereins für Luftschiffahrt.

Luftschau, 4. Jahrg., Nr. 18 (24. Sept. 1931), Berlin, p. 62.

— Hilfslandeplätze auf Nachtflugstrecken.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 13-14 (4. April 1931), Berlin, pp. 79-80.

— Statistik des deutschen Fluglinienverkehrs im Kalenderjahr 1930.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 32-33, 34-35 (15., 29. Aug. 1931), Berlin, pp. 228-236, 238-246.

— Verleihungsbedingungen und Verleihungsverfahren im Flugfunkdienst.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 40-41 (3-10. Okt. 1931), Berlin, pp. 286-290, 294-297.

— Zweck und Ausschreibung des Deutschlandfluges!

Luftschau, 4. Jahrg., Nr. 15 (10. Aug. 1931), Berlin, pp. 25-26

— See Aviaticus: "Aviaticus, Jahrbuch der Deutschen Luftfahrt, 1931".

— See Beck, Waldemar C.-A.: Le budget aéronautique allemand pour 1931.

— See Cesar: Englandflug des deutschen Luftfahrtverbandes.

— See Corrosion: Corrosion tests in Germany. Tentative standard methods laid down by the Aluminium Board of the Reichsausschuss für Metallenschutz. Translated by Georg Goldbach.

— See Deutsche Luft Hansa a.g.: Das luftfrachtverkehr; ein merkbuch für den eilversand.

— See Georgii, Walter: Ten years' gliding and soaring in Germany.

— See Gottscho, Ernst: Luftverkehrsrecht; luftverkehrsgesetz und luftverkehrsverordnung nebst ergänzendem anhang; mit einleitung, erläuterungen, tabellen und sachverzeichnis.

— See Great Britain: Agreement between His Majesty in respect of the United Kingdom and the President of the German Reich amending the agreement of June 29, 1927 relating to air navigation. Berlin, July 5, 1930. Ratifications exchanged at Berlin, May 6, 1931.

— See Hahn, Kurt: Die deutschen luftverkehrsabkommen.

— See Heinze, Edwin P. A.: The "Deutschlandflug, 1931".

— See Heinze, Edwin P. A.: German transport airplanes.

— See Hoeck, James: Braunschweig cradle of German aviation.

— See Hübner, Walter: Der Deutschlandflug 1931.

— See Osswald, Emmy: Zur rationalisierung der innerdeutschen handelsluftfahrt.

— See Pleines, Wilhelm: Die Flugzeugmuster des "Deutschlandflug 1931."

GERNSBACK, HUGO, and EMANUEL STIERI. Aviation mechanics. Vol. 1-2; April ? 1930-July, August 1931.

New York, Popular Book Corporation, 1930-31, Aviation Mechanics Publications, inc., 1931, ills., diagrs. Editors: April 1930-February 1931, Hugo Gernsback. March-August 1931, Emanuel Stieri. No more published.

GERRISH, HAROLD C., and FRED VOSS. Investigation of the discharge rate of a fuel-injection system.

National Advisory Committee for Aeronautics, Technical Notes No. 373, April 25, 1931, Washington, April 1931, pp. 11, ills., diagrs., tabl.

GERVILLE-RÉACHE, LEO. Autour du monde en Zeppelin.

Paris, La Nouvelle Revue Critique, 1929, pp. 223, Ills.
Collection La vie d'aujourd'hui, 7.

GESCHEIT, H. H., und K. WITTMANN. Neuzeitlicher verkehrsbau.

Potsdam, Müller & Kiepenheuer Ges. Verlag, 1931, pp. 334, ills.

GIACOMELLI, R. An all-metal Savoia. The new S. 55M described and illustrated.

Aircraft Engineering, Vol. 3, No. 29 (July 1931), London, p. 174, ills., diagrs.

GIALANELLA, LUCIO. Sulle correnti generate da una coppia di vortici o di sorgenti.

L'Aerotecnica, Vol. 11, N. 1 (gen. 1931), Roma, pp. 78-92, diagrs. English abstract, pp. 146-147.

GIANNINI, AMEDEO. Gli aeromobili militari.

Riv. Aer., Ano 7, N. 6 (giugno 1931), Roma, pp. 442-450.

— La nazionalità degli aeromobili.

Riv. Aer., Anno 7, N. 8 (Agosto 1931), Roma, pp. 243-258.

— Saggi di diritto aeronautico.

Milano, Soc. ed. "Vita e Pensiero", 1931, pp. 378.

GIANT AIRPLANES. See Jones, Ernest: What of the giant airplane?

GIFFEN, E. See Davies, S. J., and E. Giffen: Injection, ignition and combustion in high-speed heavy-oil engines.

GILLIAM, RALPH E. Glue—How to use it.

Western Flying, Vol. 9, No. 5 (May 1931), Los Angeles, Cal., pp. 42-43, 90.

GINGRICH, JOHN EDWARD. Aerial and marine navigation tables.

New York and London, McGraw-Hill Book Company, inc., 1931, pp. vii, 63, tabls., diagrs.

GIRAUT, MAURICE. Méthode géométrique de tracés de profils d'ailes et de corps fuselés. Essai sur la viscosité en mécanique des fluides.

Paris, E. Blondel La Rougery [etc.], 1931, pp. 28, 34, ills., diagrs.

GIRDERS. See Cassens, J.: Gewichtsermittlung der wichtigsten einfachen träger.

— See Misztal, Franciszek: Doświadczalne sprawdzenie teorji belek prostych o przekrojach wiótkich.

— See Wagner, Herbert: Flat sheet metal girder with very thin metal web.

GLASS, T. G. Wind channel walls interference.

Transactions of the Central Aero-Hydrodynamical Institute, No. 55, 1930, Moscow.

GLAUERT, H. Airscrews for high speed aeroplanes.

Aer. Res. Comm., Rep. Mem., No. 1342, (Ae. 474-T. 2985), June 1930, London, 1931, pp. 18, diagrs., tabls.

— The force and moment on an oscillating aerofoil.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 742-758, diagrs., tabls. Rep. Mem. No. 1242. (Ae. 397.)

— The importance of the boundary layer.

Journ. Roy. Aer. Soc., Vol. 35, No. 244 (April 1931), London, pp. 333-337.

GLAUERT, H. Some generalised curves for the accelerated motion of an aeroplane.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 666-676, diagrs., tabls. Rep. Mem. No. 1291. (Ae. 440.)

— The stability of a body towed by a light wire.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1331-1352, diagrs., tabls. Rep. Mem. No. 1312. (Ae. 451.)

— The use of small wind tunnels in aeroplane design.

Journ. Roy. Aer. Soc., Vol. 35, No. 243 (March 1931), London, pp. 207-230, diagrs.

GLAZEBROOK, RICHARD. Aeronautical research in England. A summary of ten years' work directed by the Aeronautical Research Committee.

Aircraft Engineering, Vol. 3, No. 25 (March 1931), London, pp. 63-66, tabls.

GLAZEBROOK, R. T. Aeronautical Research Committee. Report for the year 1929-1930.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 1-14, illus.

GLENDINNING, W. G. Possible cause of aircraft fires on crash.

— Aer. Res. Comm., Rep. Mem., No. 1375 (E. 47-G.36, 39 & a.), January 1930, London, 1931, pp. 19, ills., diagrs., tabls.

GLIDERS. The "Tern" glider.

Flight, No. 1185, Vol. 23, No. 37 (Sept. 11, 1931), London, p. 923, ills.

— See Andrews W. R.: Gliders and gliding.

— See Brant: The Brant "Scud" intermediate gliders.

— See Fischer, Arsenius: Zum segelflugproblem.

— See Flanders, L. Howard: The flight conditions of glider.

— See Harmel, Falk: Breaking the endurance record for gliders.

— See Italiaander, Rolf: So lernte ich Segelfliegen.

— See Lemoing, C.: Le premier vol sans moteur vers 1806 à Angoulême.

— See Lippisch, A.: The development, design and construction of gliders and sailplanes.

— See Rhön-Rossitten-Gesellschaft: Richtlinien für bau von gleit- und segelflugzeugen, bearbeitet von der Technischen Kommission der Rhön-segelflugwettbewerbe . . .

— See Stamer, Fritz: Gleit- und segelflugschulung.

— See United States Department of Commerce. Aeronautics Branch. Gliders and gliding. July 1, 1930.

— See Walker, Donald F.: A glider year.

— See Winkler, Horst: Das hochleistungs-segelflugmodell, im auftrage des Jugendausschusses des Deutschen Luftfahrt-Verbandes E.V.

GLIDING. Gliding activities.

Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 37-38, ills.

— See Avia: Le vol sans moteur.

— See Dorset Gliding Club: Gliding; a yearbook published by Dorset Gliding Club dealing with every aspect of motorless flight . . . 1931.

GLIDING. *See* Entwistle, F.: The meteorological aspects of gliding.

— *See* Fischer, Arsenius: Zum Segelflugproblem.

— *See* Gerogii, Walter: Ten years' gliding and soaring in Germany.

— *See* Kleffel, Walther: Der Segelflug; ein ruhmeskapitel aus der geschichte des menschenfluges. Für die Rhön-Rossitten-Gesellschaft geschrieben.

— *See* Langsdorff, Werner von: Das Segelflugzeug.

— *See* Minelli, C.: Le ali dei velivoli e le loro strutture.

— *See* Ross, Malcolm Harrison: Sailing the skies; gliding and soaring.

— *See* Soaring.

— *See* Stamer, Fritz, und A. Lippisch: Gleitflug und Gleitflugzeuge. Teil II. Bauanweisungen und Bauzeichnungen.

— *See* Switzerland. Schweiz. Motorloser Flug. Reglement betreffend die Organisation der Aufsicht über das motorlose Flugwesen vom 14. Dezember 1930.

— *See* White, Percival, and Mat White; Gliding and soaring; an introduction to motorless flight.

GLOECKNER, HEINRICH. Beiträge zur Flugfunkeigenteilung.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V. München und Berlin, 1931, pp. 672-678, ills., map, diagr.

GLOSTER. The Gloster S.S. 19. A multi-gun single-seater fighter.

Flight, No. 1157, Vol. 23, No. 9 (Feb. 27, 1931), London, p. 176, ill.

— Static stability tests of Gloster IV floats.
Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 338-339, diagr. M.A.E.E. Report No. F A 48.

— Static thrust tests of two airscrews on Gloster IIIB No. N. 195.
Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 270-273, ills., diagrs., table. M.A.E.E. Report No. F A 56.

— Tests of experimental airscrews on Gloster IIIA.
Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 274-279, tabs. M.A.E.E. Report No. F A 27.

— *See* Cowley, W. L., and R. Warden: Tests of quarter scale models of high speed seaplanes for the Schneider Trophy Contest of 1927. Section II. Tests on the Gloster IV models.

— *See* Davies, H.: Tests on Gloster IVB fuselage.

— *See* Davies, H.: Wind tunnel test of a modified Gloster IV float.

— *See* Harris, R. G., L. E. Caygill, and R. A. Fairthorne: Wind tunnel tests on Gloster and Supermarine wing radiators.

— *See* Hartshorn, A. S.: Test of a model of a Gloster high speed seaplane.

— *See* Hartshorn, A. S.: Wind tunnel test of a Gloster IV float.

— *See* Preston, H. E.: Notes on design and construction of Gloster IV. 1927 Schneider Trophy racing seaplanes.

GLOVER, W. IRVING. Contract air mail's future.

Aviation, Vol. 30, No. 4 (April 1931), New York, pp. 218-219.

GLOVER, W. IRVING. Tomorrow's speed will make stage coaches of today's planes.

U.S. Air Services, Vol. 16, No. 3 (March 1931), Washington, pp. 22, 24.

GLUE. *See* Gilliam, Ralph E.: Glue—How to use it.

GOERZ-CLEMENTI. Indicatore di rotta Georzs-Clementi.

Riv. Aer., Anno 7, N. 3 (marzo 1931), Roma, pp. 534-535, ill.

GOLD, E. *See* McAdie, Alexander, and E. Gold: Meteorological conditions during the air raid on London, Oct. 19-20, 1917.

GOLDBACH, GEORG. Vereisungsgefahr bei Flugzeugen.

Die Umschau, 35. Jahrg., Heft 6 (7. Feb. 1931), Frankfurt, a.M., p. 106.

GOLDINGHAM, ARTHUR M. High speed Diesel engines; automotive, aeronautical and marine, with full discussion on the various fuel injection mechanisms, together with sectional views of the numerous existing designs with their working parts.

London, E. and F. N. Sponltd., 1931, pp. 160.

GOLDSBOROUGH, FRANK. *See* Mockler, Don: Frank Goldsborough.

GOLDSBOROUGH, PAUL. Are European airlines better than those of the United States?

Aero Digest, Vol. 19, No. 5 (Nov. 1931), New York, pp. 36-37, 88, ill.

GOLDSMITH, MARGARET LELAND. Zeppelin, a biography.

New York, W. Morrow & Company, 1931, pp. 278, ill.

GOLDSTEIN. *See* Helmbold, H. B.: Goldstein's solution of the problem of the aircraft propeller with a finite number of blades.

GOODRICH. *See* Ice: Tegen ijsaanzetting.

GOODYEAR, H. R. R. *See* Dorset Gliding Club: Gliding; a yearbook published by Dorset Gliding Club dealing with every aspect of motorless flight ... 1931.

GOODYEAR-ZEPPELIN. *See* Akron: The latest rigid airship. The Goodyear-Zeppelin Akron built for the U.S. Navy fully described and illustrated.

GOODYEAR-ZEPPELIN CORPORATION. *See* Watson, Wilbur Jay: Building the world's largest airship factory and dock; a complete description of this giant structure of the Goodyear-Zeppelin Corporation at Akron, Ohio.

GORDON-BENNETT. *See* Raven, E.: Vom Freiballon, Fortschritt, Handikap und dem Fehlen den Gordon-Bennett-Ballon.

GORE, WARREN J. Use of air travel tickets.

Aero Digest, Vol. 19, No. 3 (Sept. 1931), New York, p. 73, ill.

GOTLAND. *See* Hult, I.: Flygplankryssaren "Gotland."

GOTO, MASAHIRO. *See* Alloys: Über die Herstellung und die mechanischen Eigenschaften der Al-Cu-Si Legierungen.

GOTTSCHO, ERNST. Luftverkehrsrecht; luftverkehrsgesetz und luftverkehrsverordnung nebst ergänzendem anhang; mit einleitung, erläuterungen, tabellen und sachverzeichnis.

München, Beck, 1931, pp. xi, 201, ill., tabls.

GOUGE, A. Some aspects of the design of sea-going aircraft.

Flight, No. 1151, 1152, Vol. 23, No. 3, 4 (Jan. 16, 23, 1931), London, pp. 59-64, 83-86, ill., diagrs.

Journ. Roy. Aer. Soc., Vol. 35, No. 245 (May 1931), London, pp. 341-371, ill., diagrs.

GOUGH, H. J., and H. L. COX. The behaviour of a single crystal of antimony subjected to alternating torsional stresses.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 978-993, ills., diagrs., tabls. Rep. Mem. No. 1323. (M.69.)

— Further experiments on the behaviour of single crystals of zinc subjected to alternating torsional stresses.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 956-975, ills., diagrs., tabls. Rep. Mem. No. 1322 (M. 68.)

— Mode of deformation of a single crystal of silver.

Aer. Res. Comm., Rep. Mem., No. 1385 (M. 70-T. 2974 & a), June 1930, London, 1931, pp. 13, ills., diagrs., tabls.

GOUGH, MELVIN N. The variation in pressure in the cabin of an airplane in flight.

National Advisory Committee for Aeronautics, Technical Notes No. 368, March 24, 1931, Washington, March 1931, pp. 6, ills., diagrs.

GOULD, BRUCE. *See* Fokker, Anthony Herman Gerard, and Bruce Gould: Flying Dutchman; the life of Anthony Fokker.

GOUPIL, ALEXANDER. *See* Zahm, Albert Francis: Alexander Goupil, inventor of three-torque airplane control.

GOVERNORS ISLAND. *See* United States Congress. House. Committee on Military Affairs: Increase flying-field area of Governors Island, N.Y. ... Report to accompany H.R.137.

GRACE, DICK. (RICHARD VIRGIL GRACE) I am still alive.

New York, San Francisco, Rand, McNally and Company, 1931, pp. 255, ills. Introduction by William Wellman.

GRAF ZEPPELIN. Graf Zeppelin in England.

Flight, No. 1183, Vol. 23, No. 35 (Aug. 28, 1931), London, pp. 853-854, 855-856, ill.

— Transatlantique de l'air.

L'Aérophile, 39e année, No. 10 (15 oct. 1931), Paris, p. 290, ill.

— The visit of the Graf Zeppelin.

Aeroplane, Vol. 41, No. 9 (Aug. 26, 1931), London, pp. 518-522, ills.

Flight, No. 1182, Vol. 23, No. 34 (Aug. 21, 1931), London, pp. 830-831, ills.

— The Zeppelin arctic expedition.

Aeroplane, Vol. 41, No. 5, 6 (July 29, Aug. 5, 1931), London, p. 327, 340.

— *See* Derstroff, Hanns: Die polarfahrt des "Graf Zeppelin." "SOS Nautilus" kein "Stop Zeppelin."

— *See* Kohl-Larson, Ludwig: Die arktisfahrt des "Graf Zeppelin", im auftrage der Internationalen Gesellschaft zur Erforschung der Arktis mit Luftfahrzeugen (Aeroarctic).

— *See* Kohrs, W.: Nautilus und Zeppelin.

— *See* Moltschanoff, P.: Polarfahrt im Nebel. Wolkenstudien während der Polarfahrt des Luftschiffs "Graf Zeppelin."

— *See* Moleyns, A. F. de: Round Britain in the "Graf Zeppelin."

— *See* Sturm, Fritz, und M. Schirmer: Triebwerkanlage mit Vorgelege im Luftschiff "Graf Zeppelin."

GRAGG, CHARLES INSCO, and MALCOLM PERRINE McNAIR. Cases on marketing airplanes.
New York, McGraw-Hill, 1931, pp. 385. Harvard Business Reports, Vol. 10.

GRAHAM, WILLIAM T. Plane solves time.
Airway Age, Vol. 12, No. 3 (Mar. 1931), New York, pp. 269-270, illus.

GRANGER, JAMES E. The spectators' viewpoint.
Western Flying, Vol. 10, No. 4 (Oct. 1931), Los Angeles, Calif., pp. 16-17.

GRANT, A. J. Making a compressed-air tunnel. An account of the methods adopted in constructing the steel shell for the new tunnel at Teddington.
Aircraft Engineering, Vol. 3, No. 26 (April 1931), London, pp. 93-96, illus., diagrs.

GRANT, HUGH DUNCAN. Reading the weather map.
Airway Age, Vol. 12, No. 2 (Feb. 1931), New York, pp. 146-148, illus.

GRANTHAM, FREDERICK W. Safety in the air.
Los Angeles, California, The Wolfer Printing Company, 1931, pp. 203, illus.

GRANVILLE, Z. D. Gee Bee super-sportster. Winner of the Thompson trophy at 236.24 M.P.H.
Aero Digest, Vol. 19, No. 4 (Oct. 1931), New York, pp. 70-72, illus.

GRAVES, W. H. Aircraft Diesel engine fuels.
Proc. Amer. Petr. Inst., Vol. 11, No. 73 (Dec. 31, 1930), New York, pp. 53-57, illus.

GRAY, B. E. Surfacing the small airport.
Airport Section, Western Flying, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Calif., pp. 85-86, illus.

GRAY, Mrs. EDITH (STEARNS). "Up"; a true story of aviation.
Strasburg, Va., Shenandoah Publishing House, inc., 1931, pp. xv, 384, illus.

GREAT BRITAIN. Agreement between His Majesty in respect of the United Kingdom and the President of the German Reich amending the agreement of June 29, 1927 relating to air navigation. Berlin, July 5, 1930. Ratifications exchanged at Berlin, May 6, 1931.
London, H. M. Stationery Office, 1931, pp. 5. Foreign Office. Treaty series No. 26 (1931). Cmd. 3880.

— Air estimates.
Flight, No. 1159, Vol. 23, No. 11 (March 13, 1931), London, pp. 231-234.

— The air estimates. Mr. Montague's speech in the house of commons.
Flight, No. 1161, Vol. 23, No. 13 (March 27, 1931), London, pp. 280-282.

— Air Ministry. The air pilot.
Published by order of the Air Council. London, His Majesty's Stationery Office, 1931, Vol. 1, illus., tabs. 2d impression (1931), incorporating supplements No. 1-16.

— Air Ministry. Manual for medical officers of the Royal Air Force . . . 2nd edition 1931.
London, His Majesty's Stationery Office, 1931, 258. Air Publication 1269.

— Air Ministry. A manual of rigging for aircraft.
London, His Majesty's Stationery Office, 1931, pp. 180, diagrs. 2nd edition February 1931. Air Publication 1107.

— Air Ministry. The Mark I Atlas army cooperation aeroplane. With an appendix on the Atlas dual control aeroplane. Vol. 1.
London, His Majesty's Stationery Office, 1931, pp. 92, illus., diagrs. 2nd edition May 1931. Air Publication 1375.

— Air Ministry. The Moth two-seater light aeroplane. Gipsy Mark I engine.
London, His Majesty's Stationery Office, 1931, pp. 72, illus., diagrs. Air Ministry. Issued October, 1931. 1st edition June 1931. Air Publication 1422, Vol. 1.

GREAT BRITAIN. Air Ministry. Parachute manual.

London, His Majesty's Stationery Office, 1931, pp. 112, diagrs., ills. 2nd edition, May 1931. Air Publication 1182.

— Air Ministry. Permanent commissions in the General Duties Branch of the Royal Air Force. Regulations for appointment of university candidates. London, 1931. Air publication 904. 4th edition, May 1931.

— Air Ministry. Regulations and schedule of charges in respect of the testing of material, instruments, gauges, etc., at the A.I.D. test house. London, His Majesty's Stationery Office, 1931. 2d edition July 1931. Air publication 1226.

— Air Ministry. Regulations for University Air Squadrons.

London, His Majesty's Stationery Office, 1931, pp. 16. 1st edition, Aug. 1930. Air Publication 1401.

— Air Ministry. Report on the health of the Royal Air Force for the year 1930.

London, His Majesty's Stationery Office, 1931. Air Publication 1427.

— Air Ministry. Report on the Royal Air Force promotion exams B and C held on the 2nd, 3rd, 4th and 5th Sept. 1930.

London, His Majesty's Stationery Office, 1931. Air Publication 1410.

— Air Ministry. Report on the Royal Air Force promotion exams B, C, E and F held on 3rd, 4th, 5th and 6th March 1931, with copies of the exam papers and examiners' remarks thereon.

London, His Majesty's Stationery Office, 1931. Air Publication 1424.

— Air Ministry. Royal Air Force. Flying training manual. Part I. Flying instruction . . . Reprinted Sept. 1931.

London, His Majesty's Stationery Office, 1931, pp. 238, ills., diagrs. Air Publication 129.

— Air Ministry. Royal Air Force aircraft route book . . . Air Ministry.

London, His Majesty's Stationery Office, 1931, 2 vols., plates, maps, tabs.

— Air Ministry official notices. Instructions to aircraft owners and ground engineers regarding essential modifications.

Aircraft Engineering, Vol. 3, No. 31 (Sept. 1931), London, pp. 230.

— Anti-aircraft gun and instrument drills (mobile and semi-mobile), 1931. The War Office.

London, His Majesty's Stationery Office, [printed by William Clowes and Sons, Ltd.], 1931, pp. x, 148, ills.

— Het Britsche luchtschepen-programma.

Het Vliegveld, 15de Jaarg., No. 6 (Juni 1931), Amsterdam, p. 211.

— Conditions of service of women staff employed in the Navy, Army, and Air Force institutes. Report of committee appointed by the Minister of Labor.

London, His Majesty's Stationery Office, 1931, pp. 112. Parliament. Papers by command. Cmd. 3769.

— Convention between His Majesty, in respect of the United Kingdom and of India, and the King of Italy respecting air transport service. Rome, May 16, 1931. [This convention has not been ratified by His Majesty.]

London, His Majesty's Stationery Office, 1931, pp. 17. Parliament. Papers by command. Cmd. 3892.

GREAT BRITAIN. Convention between His Majesty, in respect of the United Kingdom, and the President of the Hellenic Republic respecting air transport services. Athens, April 17, 1931. [This convention has not been ratified by His Majesty.]

London, His Majesty's Stationery Office, 1931, pp. 11. Foreign Office, Greece No. 1 (1931). Parliament. Papers by Command. Cmd. 3889.

— Exchange of notes between His Majesty's governments in the United Kingdom, Canada, the Commonwealth of Australia, New Zealand, and the Union of South Africa and the Government of India, and the Italian government respecting documents of identity for aircraft personnel. London, April 13, 1931.

London, H. M. Stationery Office, 1931, pp. 6. Foreign Office. Treaty series No. 24 (1931). Cmd. 3855.

— La fotografia aerea nell'aviazione britannica.

Riv. Aer., Anno 7, n. 7 (luglio 1931) Roma, pp. 97-100, ills.

— 424 Mill. RM für die englische Luftfahrt.

Luftschau, 4. Jahrg., Nr. 6 (24. März 1931), Berlin, p. 42.

— Grossbritannien. Ausführungsbestimmungen. Vom 20. Dezember 1930 zur britischen Luftfahrtverordnung vom 19. Dezember 1923.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 6-7 (14. Feb. 1931), Berlin, pp. 38-40.

— Increased armament for British military aeroplanes.

Illustrated London News, Vol. 88, No. 2289 (Mar. 7, 1931), London, p. 361, ill.
Machine guns fitted to leading edge converging on a target.

— Instructions for practice, anti-aircraft artillery. 1931 . . . The War Office, 28th February, 1931.

London, His Majesty's Stationery Office, [printed by William Clowes and Sons, Ltd.,] 1931, pp. 20, ills., tabls.

— Nachtflugübungen. London, Flughafen. Zollflughäfen. Verordnung.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 5 (31. Jan. 1931), Berlin, pp. 27-29.

— On British airmindedness.

Aeroplane, Vol. 40, No. 19 (May 13, 1931), London, pp. 857-858, 860, 862, ill.

— On the air debate.

Aeroplane, Vol. 40, No. 12 (March 25, 1931), London, pp. 493-494, 496, 498, 500-501.

— On the air estimates.

Aeroplane, Vol. 40, No. 10 (March 11, 1931) London, pp. 401-402, 404, 406, 408, 410, 412.

— On the air estimates again.

Aeroplane, Vol. 40, No. 13 (April 1, 1931), London, pp. 541-542, 544, 546, 548, 550.

— On the best British aviator.

Aeroplane, Vol. 41, No. 23 (Dec. 2, 1931), London, pp. 1257-1264, port., ill. H. J. L. Hinkler.

— Report of the R. 101 inquiry. Presented by the Secretary of State for Air to Parliament by command of His Majesty, March 1931.

London, H. M. Stationery Office, 1931, pp. 129, ills., diagrs.

Court of inquiry into the loss of R. 101. Report of an investigation into the causes and circumstances of the accident which occurred on October 5th 1930, near Beauvais, France to the British airship R. 101.

Parliament. Papers by command, Cmd. 3825.

— Signale zwischen Luftfahrzeugen und Schiffen. Kairo-Kapstadt, Luftverkehr. Jersey, Verordnung.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 9 (28. Feb. 1931), Berlin, pp. 53-56.

— Verordnung. Britische Luftfahrtverordnung vom 19. Dezember 1923 unter Berücksichtigung der bis einschliesslich 1930 vorgenommenen Abänderungen.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 1, 4 (3. 24. Jan. 1931), Berlin, pp. 2-6, 21-24.

GREAT BRITAIN. *See* Buenos Aires: The British aircraft industry at Buenos Aires.

— *See* Buenos Aires: British Empire trade exhibition Buenos Aires 1931.

— *See* Buenos Aires: Buenos Aires. The Prince opens the exhibition.

— *See* Cesar: Englandflug des deutschen Luftfahrtverbandes.

— *See* Cranwell: Regulations for admission to the Royal Air Force College, Cranwell . . .

— *See* Freeman, William Marshall: Air and aviation law (civil aviation) being an exposition of the statute and case law affecting air navigation.

— *See* Greece: British aircraft for Greece. Fairey Company's substantial order.

— *See* Hegener, Henri: De jaarlijksche gloriedag der Britsche luchtmacht.

— *See* Lamarche, Paul E.: Observation and bombing airplanes of Great Britain.

— *See* McCudden, James Thomas Byford: Flying fury.

— *See* Mettam, H. A.: Performance requirements for airworthiness in Great Britain and the U.S.A.

— *See* Prince of Wales: The Prince's home flight: The final stage of the historic flight.

— *See* Sims, C. A.: British aircraft illustrated.

— *See* Snowden Gamble, Charles Frederick: The air weapon, being some account of the growth of British military aeronautics from the beginnings in the year 1783 until the end of the year 1929.

— *See* South America: British activities in South America.

— *See* Treusch von Buttlar-Brandenfels, Horst: Zeppelins over England.

GREECE. British aircraft for Greece. Fairey Company's substantial order. Flight, No. 1160, Vol. 23, No. 12 (March 20, 1931), London, pp. 252-253, ills.

— Sperrgebiete. Verordnung vom 24. November 1930 betreffend Festsetzung der für die Luftfahrt verbotenen Zonen. Nachrichten für Luftfahrer, 12. Jahrg., Nr. 12 (21. März 1931), Berlin, pp. 73-76, maps.

— Verordnung vom 24. November 1930 betreffend Benachrichtigung wegen Ueberfliegens oder Landung auf griechischem Staatsgebiet durch Privatflugzeuge. Nachrichten für Luftfahrer, 12. Jahrg., Nr. 5 (31. Jan. 1931), Berlin, p. 31.

— Vorschriften betreffend den Besuch ausländischer Luftfahrzeuge in Griechenland. Nachrichten für Luftfahrer, 12. Jahrg., Nr. 1 (3. Jan. 1931), Berlin, pp. 7-8.

— *See* Great Britain: Convention between His Majesty, in respect of the United Kingdom, and the President of the Hellenic Republic respecting air transport services. Athens, April 17, 1931. [This convention has not been ratified by His Majesty].

GREEN, E. RAMSAY, and L. M. J. BALFOUR. An invitation to visit Yugoslavia. Aeroplane, Vol. 40, No. 18 (May 6, 1931), London, pp. 831-832.

GREEN, J. J. Breakaway of boundary layer on a cylinder and an aerofoil.
Aer. Res. Comm., Rep. Mem., No. 1396 (Ae. 517-T.2934a), May 1930, London, 1931, pp. 3, ills.

— The viscous layer associated with a circular cylinder.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 256-289.
ills., diagrs., tabs. Rep. Mem. No. 1313 (Ae. 452.)

GREEN, W. SANGER. A profitable airport.
Airway Age, Vol. 12, No. 4 (Apr. 1931), New York, pp. 362-364, ill.

GREENE, LEWIS. Aviation register . . .
Chicago, ill., Aviation Register, 1931- 3 numbers a year.

GREENE, WARWICK. Letters of Warwick Greene, 1915-1928, edited by Richard W. Hale.
Boston and New York, Houghton Mifflin Company, 1931, pp. xxiv, 309, ills.

GREENER, F. W. G. *See* Bradfield, F. B., and F. W. G. Greener: Wind tunnel test of the increased drag of a quarter scale float on adding rivets.

GREENLAND. *See* Ahrenberg, Albin: En solskensflygning Grönland-Island 1931.

GREGG, WILLIS RAY.
Some observations of a weather man in Europe.
U.S. Air Services, Vol. 16, No. 6 (June 1931), Washington, pp. 25-28.

GREY, CHARLES GREY. Air Force training. Introduction.
Aeroplane, Vol. 41, No. 1 (July 1, 1931), London, p. 39.

GREY, CHARLES GREY, and LEONHARD BRIDGEMAN. All the world's aircraft 1930.
London, Sampson Low, Marston & Company.

GREY, CHARLES GREY. Europe in 1930-31.
Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 62-67, ills.

— On a last testament.
Aeroplane, Vol. 40, No. 21 (May 27, 1931), London, pp. 961-962, 964, 966.

— On calling a bluff.
Aeroplane, Vol. 40, No. 15 (April 15, 1931), London, pp. 641-642, 644, 646.

— On errors of judgment—I, II, III.
Aeroplane, Vol. 41, No. 20, 21, 22 (Nov. 11, 18, 25, 1931), London, pp. 1101-1106, 1161-1166, 1209-1212.

— On getting back to work—I, II, III, IV, V.
Aeroplane, Vol. 41, No. 13, 14, 15, 16, 17 (Sept. 23, 30, Oct. 7, 14, 21, 1931), London, pp. 761-766, 801-804, 853-858, 905-912, 953-960.

— On the great international aviation week.
Aeroplane, Vol. 41, No. 18, 19 (Oct. 28, Nov. 4, 1931), London, pp. 1001-1010, 1060-1062, ills.

— *See* McCudden; James Thomas Byford: Flying fury.

GRINDLEY, G. C. Reports of the Committee upon the Physiology of Vision. IX.
Psychological factors in peripheral vision.
Privy Council, Medical Research Council, London, Published by His Majesty's Stationery Office, 1931, pp. 49, ills. Special Report Series, No. 163.

GROENHOFF, GÜNTHER. 265 km motorlos.
Luftschau, 4. Jahrg., Nr. 11 (10. Juni 1931), Berlin, p. 82.

GROGAN, J. D. *See* Rosenhain, W., J. D. Grogan, and T. H. Schofield: Gas removal and grain refinement in aluminium alloys.

— *See* Rosenhain, W., J. D. Grogan, and T. H. Schofield: The influence of Titanium Tetrachloride on cast aluminium alloys.

GROGAN, J. D., and T. H. SCHOFIELD. Report on some properties of alloys of aluminium with thorium and silicon.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1012-1023, ills., diagrs., tabls. Rep. Mem. No. 1253. (M. 64).

GRONAU, WOLFGANG VON. Seeflugzeug und Schiff.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 17., 22. Heft (14. Sept., 28. Nov. 1931), München und Berlin, pp. 519-524, 663-664, ills.

— Wolfgang von Gronaus Nordatlantik-Forschungsflug.
Luftschau, 4. Jahrg., Nr. 18 (24. Sept. 1931), Berlin, pp. 65-67.

GROSE, PARLEE CLYDE. The problem of vertical flight.
McComb, O., General Publishing Company, 1931, pp. 128, ill.

GROSS, GERALD C. Aviation radio in Europe.
Aviation, Vol. 30, No. 2 (Feb. 1931), New York, pp. 84-86.

GROUND school. How much ground school.
Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Cal., pp. 42-44, diagrs.

GROVES, P. R. C. *See* Bouché, Henri, et P. R. C. Groves: Études sur la situation économique, administrative et juridique de la navigation aérienne internationale.

GRÜBER, O. v. Traité de photogrammétrie aérienne et terrestre. Traduction française par A. Ansermet.
Lausanne, Éditions La Concorde, 1931, pp. 422, ills.

GRUNAU-BABY. *See* Kromer, Hugo H.: Das kleine Leistungs-Segelflugzeug "Grunau-Baby."

GRUSCHWITZ, E. Die turbulente reibungsschicht in ebener strömung bei druckabfall und druckanstieg.
[Leipzig, 1931], pp. 321-345, diagrs. Sonderdruck aus Ingenieur-Archiv . . . Berlin.

GRZESZCZYK, SZCZEPAN. Pomiary rozkładu ciśnienia za śmigłem. (Mesures de la répartition des pressions derrière l'hélice).
Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 7, Nr. 34, Warszawa, 1931, pp. 10-22, ills., diagrs., tabls.

G. 38. El "G. 38" y el "Do.X" en España.
Ibérica, Año 18, Núm. 860 (10 enero 1931), Barcelona, pp. 18-21, ills.

GUERENDIAIN, ANTONIO. Recientes perfeccionamientos del motor de explosión, principalmente en sus aplicaciones a la aviación.
Ibérica, Año 18, Núm. 887 (18 julio 1931), Barcelona, pp. 60-62, ill.

GUERRA, U. Note sulla trasmissione delle immagini dagli aerei alla terra e viceversa.
L'Aerotecnica, Vol. 11, N. 5 (mag. 1931), Roma, pp. 533-556, ills. English abstract pp. 693-694.

GUERRITORE, CARLO. Alcune predisposizioni ed alcune norme da osservarsi per l'occultamento all'indagine ed alla offesa aerea dell'organizzazione e dell'funzionamento logistico di un'armata in linea.
Riv. Aer., Anno 7, N. 11 (nov. 1931), pp. 223-246, ills.

— L'aviazione ausiliaria per il R. Esercito.
Riv. Aer., Anno 7, N. 5 (mag. 1931), Roma, pp. 215-234.

GUET, G. *See* Lainé, André: Comment devenir aviateur; formalités à remplir—examens à passer—écoles à choisir—les principes de pilotage.

GUIBERT, M. La stabilité statique dans le vol avec moteur.

L'Aéronautique, 13me année No. 140, Bulletin L'Aérotechnique, 9e année, No. 96-97 (jan. 1931), Paris, pp. 11-19, diagrs.

GUIDER, JOHN W. The juridical congress on wireless telegraphy at Liége.

Air Law Review, Vol. 2, No. 1 (Jan. 1931), New York, pp. 1-8.

— The Liege congress of the international committee on wireless telegraphy. Journal of Air Law, Vol. 2, No. 1 (Jan. 1931), Chicago, pp. 38-43.

GUIDES. Guide aérien.

Clermont-Ferrand, Michelin & Cie.

— Guide du touriste aérien et des clubs d'avions de tourisme. Paris, Blondel La Rongery.

— International air guide; the reference book on civil and commercial aviation. Air atlas. Paris, imprimerie Crété s.a. [1931], 1 vol., ills., maps.

— See Fédération Aéronautique Internationale: International air guide; the reference book on civil and commercial aviation. Air atlas.

— See Gulf Refining Company: Aviation atlas.

GUIDI, G. La corrosione dei materiali impiegati nelle costruzioni aeronautiche. Ingegnere, Vol. 5, No. 3 (marzo 1931), Roma, pp. 153-163, ills.

GUILLEMIN. The Guillemin J. G. 10 (French), a two-place touring low-wing monoplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 153, Nov. 12, 1931, Washington, November 1931, pp. 4, ills.

GUINOTTE, JULES. Aviation insurance.

Airway Age, Vol. 13, No. 14 (Oct. 3, 1931), New York, pp. 274-276.

GULF REFINING COMPANY. Aviation atlas.

Pittsburgh, Pa., Gulf Refining Company, 1931, pp. 20, ills., diagrs.

GULL-TYPE. See Poland: Polish P type single-seat fighters. All-metal Gull-type wing monoplane.

GUNN, DONALD L. The function of the air sacs of insects.

Nature, Vol. 127, No. 3193 (Jan. 10, 1931), London, pp. 58-59.

GUSTOSA, CORRADO. Da Amsterdam a Lisbona a bordo del Do X.

Riv. Aer., Anno 7, N. 4 (aprile 1931), Roma, pp. 23-89, ills., tabl.

GUTKOWSKI, TADEUSZ. Metoda określenia mnożnika oświetlenia przy użyciu filtrów barwnych w fotografii lotniczej.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne, Nr. 3, Warszawa, 1930, p. 31.

— Pomiar wysokości samolotów przy startie.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 2, Warszawa, 1930, pp. 8-9, ills.

— Pomiar wysokości samolotów przy startie (opis aparatów).

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 4, Warszawa, 1930, pp. 23-27, ills.

— W sprawie pomiarów wysokości samolotów przy startie. (Sur mesure de la hauteur des avions pendant le décollage).

Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 6, (Nr. 32), Warszawa, 1931, pp. 101-103, ill.

GUTKOWSKI, TADEUSZ. Teorja akomodacji barwnej oka, zaobserwowanej przez prof. Polack'a.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 5, (Nr. 25), Warszawa, 1931, pp. 86-90, diagrs.

— Wpływ grubości ziarna emulsji fotograficznej na budowę aparatu fotolotniczego. (L'influence de la grosseur du grain de l'émulsion photographique sur la construction de l'appareil photoaérien).

Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 6, (Nr. 31), Warszawa, 1931, pp. 97-100, illus.

GUZZONI, G., e E. NARDI. La corrosione dei metalli e leghe usati in aeronautica.

L'Aerotecnica, Vol. 11, No. 1 (gen. 1931), Roma, pp. 50-77, illus., diagrs., tabls.

English abstract pp. 144-146.

— La saldatura dei materiali metallici, le sue applicazioni nelle costruzioni aeronautiche.

L'Aerotecnica, Vol. 11, N. 3 (marzo 1931), Roma, pp. 269-309, illus., diagrs., tabls.

English abstract pp. 389-390.

GYROPLANE. See Klemin, Alexander, and B. P. Ruffner: A new type of gyroplane. Wind tunnel researches and full scale tests with a gyroplane with rigidly connected feathering rotor blades.

GYROSCOPIC control. See Marmonier, L.: La stabilità e il comando automatico dei velivoli.

GYROSCOPES. See Leva, Fausto M.: Le applicazioni del giroscopi sul mare e nell'aria.

H

H. Havens voor luchtschepen.

Het Vliegveld, 15de Jaarg., No. 4 (April 1931), Amsterdam, pp. 118-123, illus.

— See Gates, S. B.: Measured spins on aeroplane H.

H. B. L'activité aéronautique.

L'Illustration, 89e année, No. 4598 (18 avril 1931), Paris, p. 473, ill.

— Per vliegtuig van Zuid- near Noord Amerika.

Het Vliegveld, 15de Jaarg., No. 5 (Mei 1931), Amsterdam, pp. 160-163, illus., map.

H., H. Achter de schermen van de Holland-Indië lijn.

Het Vliegveld, 15de Jaarg., No. 8 (Sept. 1931), Amsterdam, pp. 324-328, maps.

— De eerste slachtoffers der luchtvaart.

Het Vliegveld, 15de Jaarg., No. 2 (Feb. 1931), Amsterdam, pp. 53-57, illus.

— Dek-vliegen.

Het Vliegveld, 15de Jaarg., Nos. 4, 5 (April, Mei 1931), Amsterdam, pp. 137-141, 169-175, illus.

— Professor Piccard over zijn hoogtevaart. Gevangenen der stratosfeer.

Het Vliegveld, 15de Jaarg., No. 11 (Nov. 1931), Amsterdam, pp. 392-393, illus.

HAARMANN, K. Die wirtschaftliche Grundlage des Betriebes von Leichtflugzeugen.

Luftschau, 4. Jahrg., Nr. 10, 12 (24. Mai, 24. Juni 1931), Berlin, pp. 76, 91.

HADDON, H. D. Structures. An introduction to aeronautical engineering. Vol. 2.

London, Gale & Polden, 1931, pp. 128, illus.

HADDON, J. D. See Engineering: An introduction to aeronautical engineering.

For students engaged in all branches of aeronautical work. Vol. 2: Structures, by J. D. Haddon.

HAEDER, W. *See* Thoelz, W., und W. Haeder: Flugmotoren in Leicht- und Schwerölbauart.

HAENNI, P. M. La protection des alliages d'aluminium et l'alecad. L'Aéronautique, 13me année, No. 140 (Jan. 1931), Paris, pp. 32-33, ills.

HAERTER, Paul. Die luftgefahr. Aufklärung über luftangriffe und schutzmassnahmen gegen ihre wirkung. München, Kellerer Verlag, 1931.

HAGUE. *See* Piercy, N. A. V.: The fifth air congress. The report of the papers read and discussions during the proceedings at the Hague.

HAHN, KURT. Die deutschen luftverkehrsabkommen. Würzburg, E. Mönnich, 1930, pp. 123.

HAIFTER, MITCHEL. Fuel systems. Aviation Engineering, Vol. 5, No. 4 (Nov. 1931), Washington, N.J., pp. 54-55, ill.

HAINES, LYNN. The Lindberghs. New York, The Vanguard Press, [1931], pp. 307, ports.

HALE, RICHARD WALDEN. *See* Greene, Warwick: Letters of Warwick Greene, 1915-1928, edited by Richard W. Hale.

HALEY, R. Setting out taper ribs. Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1165, Vol. 23, No. 17 (April 24, 1931), London, pp. 362g-362h (31-32), diagrs.

HALL, CHARLES WARD. *See* K., A.: A novel plane.

HALL, NORMAN B. Coast guarding the air. U.S. Air Services, Vol. 16, No. 2 (Feb. 1931), Washington, pp. 39-40.

HALLER, GUS. The Haller-Hawk sailplane. National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, pp. 19-20, ills.

HALLIDAY, A. S., and C. H. BURGE. Lateral stability calculations for the Bristol fighter aeroplane. Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 773-785, diagrs., tabls. Rep. Mem. No. 1306. (Ae. 446.)

HALLIDAY, A. S. Stability derivatives of the Bristol fighter. Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 759-772, diagrs., tabls. Rep. Mem. No. 1277. (Ae. 423.)

— *See* Bryant, L. W., and A. S. Halliday: Measurement of lateral derivatives of the whirling arm.

HANDASYDE, G. H. Building amphibians at Cowes. Cantilever three-ply wings on straight frame metal hulls produced by Saunders-Roe. Aircraft Engineering, Vol. 3, No. 33 (Nov. 1931), London, pp. 275-278, ills.

— Building light aeroplane engines. The design and manufacturing processes of the Cirrus-Hermes engines examined and described. Aircraft Engineering, Vol. 3, No. 31 (Sept. 1931), London, pp. 217-219, ills.

— Building radial engines. Central control and a high finish characterize the Bristol Company's production. Aircraft Engineering, Vol. 3, No. 29 (July 1931), London, pp. 163-166, ills.

— Light aeroplane production. A critical description of the De Havilland works and Moth construction. Aircraft Engineering, Vol. 3, No. 28 (June 1931), London, pp. 131-133, ills.

HANDASYDE, G. H. Rolls-Royce aero-engines. Reasons for the high standard of workmanship and efficiency at derby.

Aircraft Engineering, Vol. 3, No. 34 (Dec. 1931), London, pp. 307-312, ills., diagrs.

— Steel tube and strip. The works of Armstrong-Whitworth aircraft at Coventry visited and described.

Aircraft Engineering, Vol. 3, No. 30 (Aug. 1931), London, pp. 191-193, ills.

— Welded tube construction. Fokker robustness and Avro ingenuity, with wide use of jigs, at Manchester.

Aircraft Engineering, Vol. 3, No. 32 (Oct. 1931), London, pp. 249-251, ills.

HANDBOOKS. See Burge, Cyril G.: Handbook of aeronautics; a compendium of the modern practice of aeronautical engineering, containing over 500 graphs and diagrams, tables and formulae for the aeronautical engineer; published under the authority of the Council of the Royal Aeronautical Society.

HANDEL, PAUL VON. Untersuchungen über das Verhalten von quarzgesteuerten Sendern.

Luftfahrtforschung, Band 8, Heft 5, 1930, München und Berlin, R. Oldenbourg, pp. 20, ills., diagrs., tabls.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 645-664, ills., diagrs., tabls.

— See Brintzinger, Wilhelm, Paul v. Handel und Henrich Viehmann: Erschütterungsstörungen bei ortsbeweglichen Empfängern.

HANDLEY PAGE. Trafikflygplanet "Handley Page 42."

Flygning, Årg. 9, N:R 1 (Jan. 1931), Stockholm, p. 4, ills.

— See Pleines, Wilhelm: Flugmessungen über den Einfluss von Handley-Page-Schlitzquerrudern.

HANGARS. See Cost, R. W.: Minimizing fire hazards in airplane hangars.

— See Dirigibles: Das Dock für 2 Zeppeline und 4 Kleinluftschiffe.

— See Sylvester, Harold MacTavish: An investigation of pressures and vacua produced on structures by wind.

— See Waddington, William H.: Reducing hangar costs.

HANN, GEORGE R. Approved versus unapproved flying schools.

Nat. Aer. Mag., Vol. 9, No. 4 (April 1931), Washington, pp. 29-32, ills.

HANNIBAL. "Meet Hannibal."

Flight, No. 1177, Vol. 23, No. 29 (July 17, 1931), London, pp. 700-702, ills.

HANRIOT. The Hanriot H 431 military airplane (French). A general purpose biplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 133, Jan. 31, 1931, Washington, January 1931, pp. 12, ills., tabl.

HANSEN, ASMUS. Thermodynamische Rechnungsgrundlagen der Verbrennungskraftmaschinen und ihre Anwendung auf den Höhenflugmotor.

Berlin, VDI Verlag, pp. iv/28, ills.

Beilage zur "Forschung auf dem Gebiete des Ingenieurwesens" Bd. 2, Ausgabe B, Mai 1931.

HANSEN, F. Der Statax-Halbdiesel-Flugmotor.

Schweizer Aero Revue, Vol. 6, No. 10 (Mai 15, 1931), pp. 133-135, ills.

HANSON, EARL. Canadian Aviation—1930.

Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 68-71, ills.

HANSON, EARL. Testing engines for A.T.C. Methods employed in tests at Arlington—equipment developed and used is described in this article.
Airway Age, Vol. 12, No. 2 (Feb. 1931), New York, pp. 131-133, ills.

HANST, CHARLES E. How to learn to fly.
Western Flying, Vol. 9, No. 5 (May 1931), Los Angeles, Calif., pp. 36-38, ills.

HANWORTH. A parliamentary occasion at Hanworth.
Aeroplane, Vol. 40, No. 23 (June 10, 1931), London, pp. 1098, 1100, ills.

HARDECKER, JOHN F. Felt in aircraft.
Aviation, Vol. 30, No. 6 (June 1931), New York, p. 369.

— The interior decorator has his day.
Aviation, Vol. 30, No. 2 (Feb. 1931), New York, pp. 105-109, ills.

— The spot welding of stainless steel.
Airway Age, Vol. 13, No. 1 (July 4, 1931), New York, pp. 37-39, ills.

— Use of hardened self-tapping screws. Parts 1 and 2.
Airway Age, Vol. 12, Nos. 3, 4 (Mar., Apr., 1931), New York, pp. 245-249, 344-347, ills., tabl.

HARDY, J. K., and K. V. WRIGHT. The automatic timing of aircraft over a speed course.
Aer. Res. Comm., Rep. Mem., No. 1343, (Ae. 475-T. 2995), February 1930. London, 1931, pp. 9, ills., diagrs.
With an appendix by S. B. Gates.

HARMEL, FALK. Breaking the endurance record for gliders.
U.S. Air Services, Vol. 16, No. 11 (Nov. 1931), Washington, D. C., pp. 40-41.

HARMS, F. See Wien, Wilhelm . . . , und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 1. Teil. Hydro- und aerodynamik.

HARPER, HARRY. By air from England to India.
Nat. Aer. Mag., Vol. 9, No. 5 (May 1931), Washington, pp. 27-29, ills.

HARRIMAN, EDWARD A. Federal and state jurisdiction with reference to aircraft.
Journal of Air Law, Vol. 2, No. 3 (July 1931), Chicago, pp. 299-324.

HARRIMAN, H. H. U.S.S. Akron, world's largest airship; complete pictures and the story of the dock, ship, airport, and "Lighter-than-air-center" of the world.
Akron, O., Akron Typesetting Company, 1931, pp. 43, ills.

HARRIS, LUTHER. Airline maintenance.
Aviation, Vol. 30, No. 12 (Dec. 1931), New York, p. 701.

— Keeping track of the maintenance dollar.
Aviation, Vol. 30, No. 9 (Sept. 1931), New York, pp. 525-528, ills.

HARRIS, R. G., and L. E. CAYGILL. Model tests on Supermarine S.4 seaplane. Effect of lowering wing.
Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, pp. 204-206, ills., tabls. R.A.E. Report No. B.A.550A.

HARRIS, R. G., L. E. CAYGILL, and R. A. FAIRTHORNE. Wind tunnel experiments on steam condensing radiators.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1293-1320, diagrs., tabls. Rep. Mem. No. 1326. (E. 37.)

— Wind tunnel tests on Gloster and Supermarine wing radiators.
Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 249-262, ills., diagrs., tabls.
Reports and Memoranda No. 1311. (Ae. 450.)

HARRIS, THOMAS AUBREY. *See* Wenzinger, Carl Joseph, and Thomas A. Harris: The vertical wind tunnel of the National Advisory Committee for Aeronautics.

HARSHMAN, VERNE WARREN. My five memorable days.
U.S. Air Services, Vol. 16, No. 6 (June 1931), Washington, pp. 30-32, ill.

HART, EDWARD J. C. W. A. Scott.
Aeroplane, Vol. 40, No. 15 (April 15, 1931), London, pp. 652, 654.

HART, MORRIS D. The aeroplane as a source of sound.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1360-1397, diagrs. Rep. Mem. No. 1310.

HARTMAN, F. V., and G. O. HOGLUND. Forming of aluminum alloy sheet for aircraft.
Aviation Engineering, Vol. 5, No. 4 (Nov. 1931), Washington, N.J., pp. 36, 38, 40, ills., tabls.

HARTMANN, E. C. Comparison of weights of 17ST and steel tubular structural members used in aircraft construction.
National Advisory Committee for Aeronautics, Technical Notes No. 378, May 19, 1931, Washington, May 1931, pp. 17, diagrs.

HARTMANN, H. Deutsches Luftbildunternehmen in China.
Luftschau, 4.Jahrg., Nr. 13 (10 Juli 1931), Berlin, p. 4.

HARTSHORN, A. S. The application of the Servo principle to aileron operation.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 863-878, diagrs., tabls. Rep. Mem. No. 1262. (Ae. 411.)

— Fuselage interference effect. The available data points to conclusions favourable to the high wing in monoplanes.
Aircraft Engineering, Vol. 3, No. 30 (Aug. 1931), London, pp. 201-203, ills.

— The influence of a fuselage on the lift of a monoplane.
Aer. Res. Comm., Rep. Mem., No. 1344 (Ae. 476-T.2988), May 1930, London, 1931, pp. 14, ills., diagrs., tabls.

— Test of a model of a Gloster high speed seaplane.
Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, pp. 225-229, diagrs., tabls.
R.A.E. Report No. B.A. 668.

— Theoretical relationship for a wing with unbalanced ailerons.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 879-894, diagrs., tabls. Rep. Mem. No. 1259. (Ae. 408.)

— Wind tunnel test of a Gloster IV float.
Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, p. 207, tabl.
R.A.E. Report No. B.A. 601.

— Wind tunnel tests of seven struts.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 635-646, diagrs., tabls. Rep. Mem. No. 1327. (Ae. 460.)

HARVEY, H. G. Magnesium and its alloys in aircraft.
Metals & Alloys, Vol. 1, No. 8 (Feb. 1930), New York, pp. 365-367, ill., tabl.

HATFIELD, W. H. Rustless steels as applied to automobiles and aircraft.
Flight, No. 1158, Vol. 23, No. 10 (March 10, 1931), London, pp. 214-215, diagr., tabl.

HAUS, FR. Partances élevées et profils hypersustentateurs.
L'Aéronautique, 13me année, No. 143, Bulletin L'Aérotechnique, 9e année, No.100 (avril 1931), Paris, pp. 125-131, ills., diagrs.

— The use of slots for increasing the lift of airplane wings.
National Advisory Committee for Aeronautics, Technical Memorandums No. 635, Aug. 27, 1931, Washington, August 1931, pp. 15, diagrs.

HAUS, FR. L'utilisation pratique des procédés d'hypersustentation.

L'Aéronautique, 13me année, No. 145, Bulletin L'Aérotechnique, 9e année, No. 102 (juin 1931), Paris, pp. 205-213, ills., diagrs.

HAUS, FREDERIC CH. Stabilité et maniabilité des avions.

Paris, Gauthier-Villars et Cie., 1930, pp. 320, ills., diagrs.

HAVANA. *See* Cassidy, Louis C.: Does the Havana aerial convention fulfill a need?

— *See* International American Conference: Commercial aviation. Convention between the United States of America and other American republics. Signed at Habana, February 20, 1928.

— *See* Latchford, Stephen: Habana convention on commercial aviation.

HAVELOCK, T. H. Stability of motion of rectilinear vortices in ring formation. Philosophical Magazine, Vol. 11, No. 70 (Feb. 1931), London, pp. 617-633.

HAWAII. Hawaii: Annual report of the Chairman, Territorial aeronautical Commission, July 1, 1930-June 30, 1931. Pp. 4-7.

— *See* Coffin, Harold: Wings for Hawaii.

HAWKINS, WALTER B. Profits from sales.

Western Flying, Vol. 10, No. 1 (July 1931), Los Angeles, Calif., pp. 35-37.

— *See* Erickson, Ed. L., and Walter B. Hawkins: Reduced-rate aircraft merchandising.

HAWKS, ELLISON. The romance of transport.

New York, Thos. Y. Crowell Co., 1931, pp. 332.

Chapter 16: The story of the airship, pp. 279-296.

Chapter 17: The story of the aeroplane, pp. 297-309.

Chapter 18: Air transport to-day, pp. 310-327.

HAWKS, FRANK. Navigation à la slide rule.

Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, Calif., p. 33, ill.

— Speed.

New York, Brewer, Warren & Putnam, 1931, pp. 314, ills.

— What kind of surface a pilot wants.

Airport Section, Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Calif., pp. 83-84, port.

HAYES, ROBERT. Alaska-Washington.

Airway Age, Vol. 13, No. 1 (July 4, 1933), New York, pp. 40-43, ills.

— New use for planes. Aerial advertising work in single ship brings in revenues as high as \$35 an hour—Northwest Airways has special service.

Airway Age, Vol. 12, No. 2 (Feb. 1931), New York, pp. 144-145, ill.

HAYNES, GRISSOM E. Cockpits and crashes.

Aviation, Vol. 30, No. 5 (May 1931), New York, pp. 309-310.

HAYNES, H. GENE. Indianapolis municipal airport.

Aero Digest, Vol. 19, No. 4 (Oct. 1931), New York, p. 58, ill.

HEAT. *See* Eliás, Franz: The transference of heat from a hot plate to an air stream.

— *See* Fage, A., and V. M. Falkner: Relation between heat transfer and surface friction for laminar flow.

— *See* Jones, E. T.: Drag and heat dissipation of three radiator systems.

HEAT TRANSMISSION. *See* Cope, W. F.: Heat transmission between surfaces and fluids flowing over them. (1) The case of two-dimensional flow.

HEATERS. *See* Blackburn, E. C. Jr.: Heat and ventilation.

HEGENER, HENRI. *De Akron.* Het grootste luchtschip der wereld. Het Vliegveld, 15de Jaarg., No. 8 (Aug. 1931), Amsterdam, pp. 275-280, ills.

- Een Zeppelin-dienst op Indië. Het Vliegveld, 15de Jaarg., No. 4 (April 1931), Amsterdam, pp. 114-115.
- De jaarlijksche gloriedag der Britische luchtmacht. Het Vliegveld, 15de Jaarg., No. 7 (Juli 1931), Amsterdam, pp. 242-246, ills.
- Taalzuivering. Het Vliegveld, 15de Jaarg., No. 1 (Jan. 1931), Amsterdam, pp. 2-3.
- De travel-air eendekker, Type R. Het Vliegveld, 15de Jaarg., No. 6 (Juni 1931), Amsterdam, pp. 198-200, ills.
- Uit de eerste jaren der militaire luchtvaart. Het Vliegveld, 15de Jaarg., No. 7, 8 (Juli, Aug. 1931), Amsterdam, pp. 232-236, 282-284, ills.
- Uit de valscherm-wereld. Het Vliegveld, 15de Jaarg., No. 11 (Nov. 1931), Amsterdam, pp. 385-388, ills. Has illustration of wind tunnel for testing parachute models.
- Wat aan den weekdienst voorafging. Het tijdperk der plannen en pioniersvluchten. Het Vliegveld, 15de Jaarg., No. 9 (Sept. 1931), Amsterdam, pp. 313-318, ills.

HEIDENGREN, GABR.

Flygstambanorna.

Flygning, Årg. 9, N:R 1 (Jan. 1931), Stockholm, pp. 12-14, map.

HEINEN, ANTON. *See* K., A.: A sportsman's airship.

HEINKEL. Heinkel amphibion.

Aero Digest, Vol. 18, No. 6 (June 1931), New York, pp. 82-84, ills.

- Heinkel HE 57 "Amphibie." Sächsisches Verkehrsflugzeug. Luftschaus, 4. Jahrg., Nr. 1 (10. Jan. 1931), Berlin, p. 5, ill.
- *See* Mock, Richard M.: Heinkel plane on the S.S. Europa.

HEINKEL, ERNST, flugzeugwerke, g.m.b.h. Katapulte und katapultieren von flugzeugen.

München, J. G. Weiss'sche Buchdruckerei, 1931, pp. 98, ills., diagrs.

HEINZE, EDWIN P. A.

The "Deutschlandflug, 1931."

Flight, No. 1183, Vol. 23, No. 35 (Aug. 28, 1931), London, pp. 863-867, ills.

- Experiments with rockets. Aero Digest, Vol. 18, No. 6 (June 1931), New York, pp. 40, 138.
- Focke-Wulf canard monoplane. Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 72, 74, ills.
- The Focke-Wulf "Ente." Flight, No. 1149, Vol. 23, No. 1 (Jan. 2, 1931), London, pp. 4-8, ills.
- German transport airplanes. Parts I-VI. Aero Digest, Vol. 19, No. 1-6 (Aug.-Dec. 1931), New York, pp. 82-86, 50-52, 56-60, 78-80, 44-46, 57-59, ills.

HEINZE, EDWIN P. A. The new Argus 8-cyl. engine.
Flight, No. 1180, Vol. 23, No. 32 (Aug. 7, 28, 1931), London, p. 788, ill.

— The new Dornier landplane.
Flight, No. 1192, Vol. 23, No. 44 (Oct. 30, 1931), London, pp. 1087-1089, ills.

— The new German "Tailless."
Flight, No. 1189, Vol. 23, No. 41 (Oct. 9, 1931), London, pp. 1008-1009, ills.

HELBIG, HANS. Der Flugzeugbeobachter. Versuch einer Methodik zur Ausbildung im Orten.
Luftschau, 4. Jahrg., Nr. 2 (24. Jan. 1931), Berlin, p. 13.

— Jahres-Statistik 1930 (vom. 1. 1. bis 31. 12. 1930) des Jugend- und Segelflugausschusses des DLV.
Luftschau, 4. Jahrg., Nr. 8 (24. April 1931), Berlin, pp. 57-58, ill.

— Das Jungfliegertreffen und der Modellwettbewerb für Segelflugmodelle Pfingsten 1931 auf der Wasserkuppe.
Luftschau, 4. Jahrg., Nr. 11 (10. Juni 1931), Berlin, p. 83, ills.

HELICOPTERS. Un projet d'avion hélicoptère à hélices orientables.
L'Aéophile, 39e année, No. 11 (15 nov. 1931), Paris, p. 342, ill.

— Il velivolo-elicottero ad eliche orientabili.
Riv. Aer., Anno 7, No. 7 (lug 10 1931), Roma, pp. 120-129, ills.

— See Italy: An Italian helicopter.

— See Liptrot, R. N.: Modern development in the helicopter.

— See Philipson, Filippo: La soluzione di un problema classico.

— See Pouit, R.: Un hélicoptère de 40 HP; le Pescara 4 S.

— See Torres, M. de: Ensayos del helicóptero Pescara en Barcelona.

HÉLICOSTAT. See Oehmichen: L'hélicostat Oehmichen.

— See Oehmichen: De Oehmichen hélicostat.

HELIUM. Helium.
Die Umschau, 35. Jahrg., Heft 17 (25. April 1931), Frankfurt, a. M., p. 338.

— Helium plant celebrates first birthday.
Scient. Amer., Vol. 144, No. 2 (Feb. 1931), p. 132. ills.
Amarillo, Texas.

— More about helium.
Aeronautical Engineering, suppl. to the Aeroplane, Vol. 40, No. 4 (Jan. 28, 1931), London, p. 154.

HELLY, E. See Lamb, H.: Lehrbuch der Hydrodynamik.

HELM. Ein Flug Berlin-Wien.
Luftschau, 4. Jahrg., Nr. 7 (10. April 1931), Berlin, pp. 50-51.

HELMBOLD, H. B. Goldstein's solution of the problem of the aircraft propeller with a finite number of blades.
National Advisory Committee for Aeronautics, Technical Memorandums No. 652, Dec. 23, 1931, Washington, December 1931, pp. 7, diagrs.

— Über die Goldsteinische Lösung des Problems der Luftschaube mit endlicher Flügelzahl.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 14. Heft (28. Juli 1931), München und Berlin, pp. 429-432, diagrs.

HELMBOLD, H. B. Über Flugleistungstatistik.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 21. Heft (14. Nov. 1931), München und Berlin, pp. 629-636, diagrs.

— Über Messflüge zur Bestimmung von Stirnwiderstandsfläche und Vortriebswirkungsgrad.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 11. Heft (15. Juni 1931), München und Berlin, pp. 323-325, diagrs., tabls.

HELMORE, W. Engine performance with gaseous fuels. Part I—Characteristics and engine performance of gaseous fuels obtained from oil.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1188-1232, ills., diagrs., tabls. Rep. Mem. 1265 (E. 33.)

— Experiments on flame extinction in gaseous mixtures.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1233-1248, diagrs., tabls. Rep. Mem. No. 1266. (E. 34.)

HEMMETER, G. T. See Spanogle, J. A., and G. T. Hemmeter: Development of an impinging-jet fuel-injection valve nozzle.

HENDERSON, JOHN C., and **LOUIS A. ORSATTI**. Official miniature aircraft instruction manual, written for Los Angeles Timesplayground Aircraft League.
Los Angeles, Printed by the Times-Mirror Press, 1931, pp. 94, ills., diagrs.

HENNIG, RICHARD.
Weltluftverkehr und Weltluftpolitik.
Berlin, Zentral-Verlag G.m.b.H., 1930, pp. 67, ills.
Weltpolitische Bücherei, herausgegeben von Adolf Grahowsky, Bd. 20.

HENRICKSON, H. B. Altitude flights.
Aero Digest, Vol. 18, No. 6 (June 1931), New York, pp. 42-43, 134, ills.

— More altitude flights.
Aero Digest, Vol. 19, No. 1 (July 1931), New York, pp. 36-37, 128, ill., diagr.

HENSHAW, P. M. Air questions and answers.
London, Gale & Polden, Ltd., 1931, pp. 194, ills.
Edited by Major C. C. Turner.

— The romance of speed.
London, Gale and Polden, 1931.

HENSON, WILLIAM SAMUEL. See Davy, M. J. B.: Henson and Stringfellow, their work in aeronautics; the history of a stage in the development of mechanical flight, 1840-1868.

HENTSCHEL. Neuer Segelflug-Record auf dem Dörnberggelände bei Kassel: 11 Std. 1. Min.
Luftschau, 4. Jahrg., Nr. 9 (10. Mai 1931), Berlin, p. 68.

HERMAN, R. See Schiller, Ludwig, and R. Herman: Resistance of plates and pipes at high Reynolds numbers.

HERRICK, JACK. See Hirth, Wolfram K. E., Martin H. Schempp, and Jack Herrick: Elmira soaring contest, 1930.

HERRMANN, H. Relative economy of different methods of airplane construction.
National Advisory Committee for Aeronautics, Technical Memorandums No. 618, April 30, 1931, Washington, April 1931, pp. 43, ills., diagrs.

HERTEL, Heinrich. Dynamische Bruchversuche mit Flugzeugbauteilen.

Zeitschr. Flugt. Motorluftsch. 22. Jahrg., 15, 16. Heft (14, 28. Aug. 1930). München und Berlin, pp. 465-473, 489-502, ills., diagrs., tabls. Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V. München und Berlin, 1931, pp. 142-164, ills., diagrs., tabls.

— Steifigkeit, Festigkeit und Beanspruchung von Anschlussnägeln und Sesseln.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 111-124, ills., diagrs., tabls.

— Die Verdrehsteifigkeit und Verdrehfestigkeit von Flugzeugbauteilen

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 165-220, ills., diagrs., tabls.

HESTON. Heston an air port.

Flight, No. 1184, Vol. 23, No. 36 (Sept. 4, 1931), London, p. 881.

— The race as seen at Heston.

Aeroplane, Vol. 41, No. 5 (July 29, 1931), London, pp. 280-291, ills.

HEYDE, GUSTAV. Recording balloon theodolite.

Instrument World, Vol. 4, No. (June 1931), pp. 36-37, ills.

HEYDEMARCK, GEORG. Double-decker C. 666.

London, J. Hamilton, Ltd., 1931, pp. viii, 207, ills., map.
Translated by Claud W. Sykes.

HILDEBRANDT. Meteorologische Forschung für den Luftverkehr in Innenasien.

Luftschau, 4. Jahrg., Nr. 17 (10. Sept. 1931), Berlin, pp. 57-58.

HILDEBRANDT, A. 25. Deutscher Luftfahrttag. Zur Tagung des Deutschen Luftfahrt-Verbandes an seinem Gründungsort.

Luftschau, 4. Jahrg., Nr. 13 (10. Juli 1931), Berlin, pp. 1-2.

HILL, GEORGE C. *See* Dryden, Hugh Latimer, and George C. Hill: Wind pressure on a model of a mill building.

HINCHMAN, H. S. *See* Cuthill, R. W., and H. S. Hinchman: History and commercial value of the airplane launching catapult.

HINDRIKS, HAJO. *See* Slot, T. E.: Ter nagedachtenis van H. Hindriks.

HINKLER, BERT. The return of Bert Hinkler.

Flight, No. 1198, Vol. 3, No. 50 (Dec. 11, 1931), London, pp. 1207-1209, ills.

HINKLER, H. J. L. *See* Great Britain: On the best British aviator.

HINMAN, W. S., Jr. Automatic volume control for aircraft radio receivers.

United States Bureau of Standards, Journal of Research, Vol. 7, No. 1 (July 1931), Washington, pp. 37-46, ills., diagrs.

HIRSCHAUER, LOUIS, et CHARLES DOLLFUS. L'année aéronautique 1930-1931.

Paris, Dunod, Editeur, 1931, pp. 437, ills.

HIRSCHAUER, LOUIS. N'y a-t-il pas trop de records du monde?

L'Aéronautique, 13me année, No. 151 (déc. 1931), Paris, pp. 439-440.

HIRTH. 50-60 PS-Hirth-Vierzylinder-Flugmotor.

Deutsche Motor-Zeitung, Bd. 8, Nr. 6 (Juni 1931), pp. 207-210, ills.

— The Hirth light plane engine.

Flight, No. 1195, Vol. 23, No. 47 (Nov. 20, 1931), London, pp. 1149-1150, ills.

— Ein neuer Motor für Sportflugzeuge, der Hirth "H.M. 60."

Luftschau, 4. Jahrg., Nr. 16 (4. Aug. 1931), Berlin, p. 41, ill.

HIRTH, WOLF. Autofliegen.

Luftschau, 4. Jahrg., Nr. 11 (10. Juni 1931), Berlin, pp. 83-84.

HIRTH, WOLFRAM K. E., MARTIN H. SCHEMPP, and JACK HERRICK. Elmira soaring contest, 1930.

National Advisory Committee for Aeronautics, Technical Memorandums No. 613, March 31, 1931, Washington, March 1931, pp. 13, tabls., maps.

HISPANO-SUIZA. Hispano-Suiza 1,000 Hp. 18 cylinder stock aircraft engine is designed after 1929 Schneider Cup race entry.

Automotive Ind., Vol. 65, No. 7 (Aug. 15, 1931), New York, pp. 242-244, ills.

HISTORY. Ein Pionier des Luftverkehrs.

Luftschau, 4. Jahrg., Nr. 17 (10. Sept. 1931), Berlin, p. 52.

- See Althin, Torsten: Flygkönika; bilder och notitser ur luftfartens historia.
- See Barker, Fowler W.: Air pioneers of the west.
- See Carter, Lane: When our wings began to sprout.
- See Carus-verlag, Berlin: Eine chronik des flug-gedankens bis zum luftverkehr im dienste der völkerverbindung.
- See Davy, M. J. B.: Henson and Stringfellow, their work in aeronautics; the history of a stage in the development of mechanical flight, 1840-1868.
- See Fairey, C. R.: Growth of aviation.
- See Gray, Mrs. Edith (Stearns): "Up"; a true story of aviation.
- See Gulf Refining Company: Aviation atlas.
- See H.H.: De eerste slachtoffers der luchtvaart.
- See Hegener, Henri: Uit de eerste jaren der militaire luchtvaart.
- See Magoun, Frederick Alexander, and Eric Hodgins: A history of aircraft.
- See Morazzoni, Giuseppe: Un pioniere dell'aeronautica Vincenzo Lunardi; documenti inediti e saggio iconografico, raccolti da G. Morazzoni.
- See Mortane, Jacques: Leur dernier vol.
- See Mumey, Nolie: Evolution of flight; stories based on legendary and historical data.
- See Newton, Byron S.: One of the greatest achievements in the story of the human race.
- See Polesine, Jotti da Badia: Il motore a vapore ed il suo impiego in aeronautica.
- See Prepositi, Clemente: La Storia dell' aviazione. Vols. I, II, e III.
- See Robertson, F. A. de V.: A brief outline of the growth of British air power from the balloon company of the Royal Engineers to the present day Royal Air Force.
- See Schneider trophy: The Schneider trophy contest.
- See Snowden Gamble, Charles Frederick: The air weapon, being some account of the growth of British military aeronautics from the beginnings in the year 1783 until the end of the year 1929.

HODGES, CURTISS. This Washington man likes flying and tells why.

U.S. Air Services, Vol. 16, No. 7 (July 1931), Washington, pp. 14-16.

HODGINS, ERIC. *See* Magoun, Frederick Alexander, and Eric Hodgins: A history of aircraft.

HODSON, DOROTHY. Keeping pilots in trim.

Western Flying, Vol. 9, No. 5 (May 1931), Los Angeles, Calif., pp. 50, 91, ill.

HOECK, JAMES. Braunschweig cradle of German aviation.

Aero Digest, vol. 18, No. 6 (June 1931), New York, pp. 50-51, 136, ills.

HOEPPNER, GERD VON. Rückblick auf den Italienflug 1931.

Luftschau, 4. Jahrg., Nr. 15 (10 .Aug. 1931), Berlin, pp. 28-30.

HOF, E. Les lois de la similitude et méthodes expérimentales en aérodynamique. *Zpravy Vojenského Leteckého Ustavu Studijního v Praze*, Vol. 5, No. 17, 1931.

HOFF, WILH. Jarhbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., Berlin-Adlershof. Herausgegeben von Wilh. Hoff; unter mitarbeit von Ottfried v. Dewitz, Paul Brenner, Heinrich Fassbender, Joachim v. Köppen, Oskar Kurtz, Otto Lacmann, Friedrich Seewald, Karl Thalau und Robert Thelen. Schriftleitung: Joachim Brämer.

München und Berlin, Druck von R. Oldenbourg, 1931, pp. xxv, 44*, 745, ills., diagrs., tabls. Veröffentlichungen der DVL. *Aerodynamische Abteilung* 219. Einige Probleme aus dem Arbeitsgebiet der Aerodynamischen Abteilung, von F. Seewald, pp. 1-22. 208. Versuche an einem Windkanalmodell, von M. Schilhansl, pp. 23-35. 213. Modellversuche zur Ermittlung des Leistungsbedarfs für künstliche Belüftung von Motoren-Prüfständern, von M. Schilhansl, pp. 36-42. 202. Über den Landestoss von Seeflugzeugen, von W. Pabst, pp. 43-58. 245. Versuchsfahrten mit einem schnellfahrenden Schienenfahrzeug mit Luftschaubenantrieb, von F. Seewald und W. Feucht, pp. 59-63. 227. Die Kälteanlage der DVL, von G. Wollé, pp. 64-66.

Statische Abteilung. 217. Aufgaben der Luftfahrzeug-Statik, von K. Thalau, pp. 67-79. Zur Frage der Belastungsannahmen für Flugzeuge, von K. Thalau, pp. 80-82. 225. Beanspruchung von Flugzeugflügeln durch Böen, von H. G. Küssner, pp. 83-100. 229. Beitrag zur Frage der Belastungsannahmen für den Landungsstoss von Seeflugzeugen, von J. Taub, pp. 101-110. 223. Steifigkeit, Festigkeit und Beanspruchung von Anschallgurten und Sesseln, von H. Hertel, pp. 111-124. 220. Versuche mit Flugzeugbremsen, von V. Michael, pp. 125-141. 248. Dynamische Bruchversuche mit Flugzeugbauteilen, von H. Hertel, pp. 142-164. 218. Verdrehsteifigkeit von Flugzeugbauteilen, von H. Hertel, pp. 165-220. 232. Versuche mit langen Bolzen in Holzbauteilen, von A. Teichmann und K. Borkmann, pp. 221-229. 224. Räumliches Knicken einiger Stabverbindungen des Flugzeugbaues, von A. Teichmann, pp. 230-232. 230. Schubknickversuche mit Wellblechtafeln, von E. Seydel, pp. 233-245. 235. Die Berechnung regelmässiger, vielfach statisch unbestimmter Raumfachwerke mit Hilfe von Differenzen-Gleichungen, von H. Ebner, pp. 246-288. 226. Beitrag zur Berechnung viergurtiger Flechtwerke, von E. Seydel, pp. 289-304. Beitrag zum Gewichtsvergleich zwischen dreigurtigem und viergurtigem Flechtwerk, von E. Seydel, pp. 305-308.

Motoren Abteilung. 249. Über die mechanische Betriebsbeanspruchung des Vergaser-Flugmotors, von O. Kurtz, pp. 309-315. 239. Die Aussichten des Strahlantriebs für Flugzeuge unter besonderer Berücksichtigung des Abgas-Strahlantriebs, von H. Oestrich, pp. 316-328. 252. Untersuchung eines Flugmotoren-Gebläses, Bauart Argus-Roots, von H. Oestrich, pp. 329-336. 253. Theoretische Untersuchung über die Möglichkeiten des Nachladeverfahrens, von H. Oestrich, pp. 337-342. 210. Untersuchungen über die Erregung von Drehschwingungen in Reihenmotoren, von R. Brandt, pp. 343-357. 204. Der DVL-Torsiograph, ein Drehschwingungs-Messgerät für Fahrzeugmotoren, von A. Stieglitz, pp. 358-361. 216. Erhöhung der Sicherheit von Luftfahrzeugen durch Bekämpfung der Brandgefahr, von F. Kühn, pp. 362-374. 251. Das Klopfen von Zündermotoren, von K. Schnauffer, pp. 375-378.

Stoff Abteilung. 234. Grundlagen für die konstruktive Anwendung und Ausführung von Stahlrohr-Schweissungen im Flugzeugbau, von A. Reichtlich, pp. 379-438. 250. Statische und dynamische Festigkeitseigenschaften einiger Leichtmetalle, von K. Matthaes, pp. 439-484. 233. Einfluss der Probestabform auf Zugfestigkeit und Bruchdehnung von dünnen Leichtmetallblechen, von K. Schraivogel, pp. 485-494. 197. Verfahren der Korrosionsprüfung, von E. K. O. Schmidt, pp. 495-504. 198. Ergebnisse von Korrosions- und Oberflächenschutzversuchen mit Aluminium-Walzlegierungen, von P. Brenner, pp. 505-520. 199. Einfluss von Kochsalzlösungen verschiedener Konzentration auf den Verlauf des Korrosionsangriffs im Wechseltauchgerät, von E. K. O. Schmidt, pp. 521-524. 209. Seewasserbeständigkeit galvanischer Überzüge auf Eisen und Leichtmetalle, von E. K. O. Schmidt, pp. 525-531. 231. Korrosionsversuche an Verspannungs-Drahtlitzen mit verschiedenartigen Endverbindungen, von M. Abraham, pp. 532-536. 222. Quantitative Ermittlung der Witterungsbeständigkeit

von Anstrichen auf Holz, von E. K. O. Schmidt, pp. 537-541. 203. Der heutige Stand der Prüfung von Flugmotoren-Kraftstoffen, von A. v. Philippovich, pp. 542-548. 240. Vergleichende motorische Untersuchung von Kraftstoffen, von A. v. Philippovich, pp. 549-566.

Abteilung für Luftbildwesen und Navigation. 243. Die Prüfung von Objektiven auf Verzeichnungsfehler, von W. Block, pp. 567-579. 228. Entzerrungsgerät für nicht ebenes Gelände, von O. Lacmann, pp. 580-582. 244. Die neue Startmesskammer System DVL-Zeiss, von O. Lacmann, pp. 583-587. 236. Verfahren zur raschen Berechnung der Deviationsbeiwerte aus in überschüssiger Anzahl gemachten Beobachtungen, von O. Lacmann, pp. 588-590. 205. Messgenauigkeit des Behmlotes für Flugzeuge bei geringen Flughöhen, von E. Schreiber, pp. 591-593. 237. Hypersensibilisierung optisch sensibilisierter Emulsionen und optische Sensibilisierung hypersensibilisierter Emulsionen, von U. Schmiescheck, pp. 594-599. 238. Versuche zur Steigerung der Haltbarkeit hypersensibilisierter Emulsionen, von U. Schmiescheck, pp. 600-604.

Abteilung für Elektrotechnik und Funkwesen. 206. Über die Zweckmässigkeit der Telegraphe und Telephone im Flugfunkverkehr mit Berücksichtigung neuer experimenteller Untersuchungen, von F. Eisner, pp. 605-614. 207. Vergrösserung der effektiven Höhe von Flugzeugschleppantennen, von F. Eisner, G. Sudeck, R. Schröer und O. Zinke, pp. 615-628. 212. Horizontale Strahlungskennlinien einer Kurzwellen-Richtantenne mit Reflektor, von R. K. Krüger und H. Plendl, pp. 629-632. 211. Erschütterungsstörungen bei ortbeweglichen Empfängern, von W. Brintzinger, P. v. Handel und H. Viehmann, pp. 633-644. 200. Untersuchungen über das Verhalten von quarzgesteuerten Sendern, von P. v. Handel, pp. 645-664. 246. Über den Einflus der 11 jährigen Sonnentätigkeitsperiode auf die Ausbreitung der elektrischen Wellen in der drahtlosen Telegraphie, von H. Plendl, pp. 665-671. 274. Beiträge zur Flugfunkeigenpeilung, von M. H. Gloeckner, pp. 672-678.

Flug Abteilung. 201. Anweisung für die Prüfung der Eigenschaften von Flugzeugen, von W. Hübner, pp. 679-683. 214. Ergebnisse von Messungen der Stabilität um die Querachse, von W. Hübner, pp. 684-690. 221. Flugmessungen über den Einfluss von Handley-Page-Schlitzquerrudern, von W. Pleines, pp. 691-708. 241. Messung des Einflusses des Schraubenstrahls auf den Ausschlag des Seitenruders im Geraudeausflug, von C. Biechteler, pp. 709-711. 242. Einfluss der Flügelumrissform und der Querruder-Abmessungen auf die Quersteuerbarkeit von Eindeckern, von G. Mathias, pp. 712-726. 215. Messung der Sicht vom Führersitz verschiedener Flugzeugmuster, von G. Kurz, pp. 727-736.

— Research work of the "DVL."

Journ. Roy. Aer. Soc., Vol. 35, No. 249 (Sept. 1931), London, pp. 771-818, ills., diagrs.
London, Royal Aeronautical Society, 1931, pp. 48. Aeronautical Reprints 60.

HOGLUND, G. O. *See* Hartman, F. V., and G. O. Hoglund: Forming of aluminum alloy sheet for aircraft.

HOLLAND. *See* H., H.: Achter de schermen van de Holland-Indië lijn.

HOLLAND, HARVEY HODGES. Aviation.

New York and London, McGraw-Hill Book Company, inc., 1931, pp. vii, 272, ills., diagrs.

HOLLYHOCK, W. S. Shock absorbers for aircraft landing gear.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1165, Vol. 23, No. 17 (April 24, 1931), London, pp. 362c-362g (27-31), diagrs.

HOLME, JOHN C. Aviation clubs in the colleges.

Aviation, Vol. 30, No. 2 (Feb. 1931), New York, pp. 102-104, ills.

HOLMES, BURTON. And so we flew across the continent.

U.S. Air Services, Vol. 16, No. 7 (July 1931), Washington, pp. 13.

HOLT, FENTON VESEY. Fenton Vesey Holt.

Aeroplane, Vol. 40, No. 17 (April 29, 1931), London, pp. 753-754.

HOLZAPFEL, KARL MARIA, KÄTE und RUDOLF STOCKS. Frauen fliegen; sechzehn deutsche pilotinnen in ihren leistungen und abenteuern . . . mit einem geleitwort von Herman Köhl.

Berlin, Deutsche Verlagsgesellschaft m.b.H. [1931], pp. 95, ills.

HOMBERGER, E. Flugzeug mit Flettner-Rotor.

Die Umschau, 35. Jahrg., Heft 5 (31. Jan. 1931), Frankfurt a.M., p. 102.

HONDURAS. Ley de aviación.

Tegucigalpa, Tipografía Nacional, 1930, pp. 31.

HOOKER, S. G. Compressibility effects in high speed air flow.

Journ. Roy. Aer. Soc., Vol. 35, No. 247 (July 1931), London, pp. 665-674, ills., diagrs.

HOOVER, HERBERT, Jr. Radio on the world's airlines.

Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 42-44, 148, ills.

HOOVER, Mrs. HERBERT. See Akron: The "U.S.S. Akron" is christened by Mrs. Hoover.

— See American Clipper: Mrs. Hoover christens the "American Clipper."

HOOVER DAM. See Beadle, J. B.: Air survey for Hoover Dam.

HOPE, W. LAWRENCE, and NORMAN W. KENNEDY. A complete course for the commercial flying license.

London, J. Hamilton Ltd., 1931, pp. xii, 347, ills., diagrs.

HOPF, LUDWIG. Flugtechnik und Versuche im Fluge.

Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 3. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1930, pp. 209-264, ills., diagrs.

— See Baranoff, A. v., and L. Hopf: Combined pitching and yawing motion of airplanes.

HORIGUCHI, SADAO. See Alloys: Über die Herstellung und die mechanischen Eigenschaften der Al-Cu-Si Legierungen.

HORIZON. See K., A.: The aviator's artificial horizon.

HORN, FRITZ. Schiffsschleppversuche.

Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 3. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1930, pp. 1-112, ills., diagrs.

HORN, HANS A., und KARL TEWES. Die Schweißung von Elektronmetall im Flugzeugbau.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 22. Heft (28. Nov. 1931), München und Berlin, pp. 659-662, ills.

HORSEPOWER. See Parker, A. E.: Horsepower at speed of sound.

HOSEY, GERTRUDE. See Humphreys, Pauline Annette, and Gertrude Hosey: Romance of the airman.

HOTINE, MARTIN. The Fourcade stereogoniometer.

London, H. M. Stationery Office, Printed by Harrison and Sons, Ltd., 1931, pp. 159, ills., tabls.

Great Britain, Air Survey Committee, professional Papers No. 7.

— Surveying from air photographs.

London, Constable and Co., Ltd., 1931, pp. xi, 250, ill.

HOUGHTON, H. G. See Stratton, J. A., and H. G. Houghton: A theoretical investigation of the transmission of light through fog.

HOUSEMAN, M. R., and G. H. KEULEGAN. Investigation of damping liquids for aircraft instruments—II.

National Advisory Committee for Aeronautics, Report No. 398, Nov. 17, 1931, Washington, U.S. Government Printing Office, 1931, pp. 19, ills., diagrs., tabls.

HOWARD, CLINTON W. Development of military airplanes.

Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 34-36, ills.

HOWELL, A. J. Ears your own control.
Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, Calif., pp. 34-35, ills.

HUBER, MAKSYMILJAN T. Nowoczesne wzory wytrzymałości złożonej.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne, Nr. 4, Warszawa, 1930, pp. 5-19, ills.

— W sprawie t.zw. współdziałania podłużnic w skrzydłach jadnopłatów.
(Sur la "coopération" des langerons dans les ailes des monoplans.)
Instytut Badań Technicznych Lotnictwa, Sprawozdanie. Bulletin No. 6 (Nr. 26), Warszawa, 1931, pp. 7-14, ill.

HUBER, T. Obciążenie krytyczne pretów osiowo ściskanych o przekroju nie- ciągle zmiennym.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne, Nr. 3, Warszawa, 1930, pp. 14-25, ills.

— Zginanie belek prostych o przekrojach wiotkich.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne, Nr. 3, Warszawa, 1930, pp. 5-13, ills.

HUBS. *See* Engines: A spring hub for aero-engines. A flexible airscrew drive damping out torque variation which also forms a transmission dynamometer.

HÜBER, WALTER. Anweisung für die Prüfung der Eigenschaften von Flugzeugen.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 679-683.

HÜBNER, WALTER. Der Deutschlandflug 1931.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 23. Heft (14. Dez. 1931), München und Berlin, pp. 685-693, diagrs., tabls.

— Ergebnisse von Messungen der Stabilität um die Querachse.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 684-690, diagrs.

— Dr.-Ing. Alfred King starb am 29. Januar 1931 den Fliegertod.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 6. Heft (28. März 1931), München und Berlin, p. 157, port.

HÜNEFELD, E. G. FREIHERR v. *See* Schäffer, Ernst: Glück ab; bahnbrecher der lüfte.

— *See* Walter, Friedrich: Hünefeld, "Ein Leben der Tat."

HUGHES, J. SCOTT. Ordeal by air.
London, Longmans, Green & Co., Ltd.

HULLS. *See* Gerard, I. J.: A method of testing the strength of aircraft hulls.

HULT, I. Flygplankryssaren "Gotland."
Flygning, Årg. 9, N:R 9 (Sept. 1931), Stockholm, pp. 183-185, ill.

HUMIDITY. *See* Bird, W. G.: The influence of atmospheric humidity and other factors upon the static lift of airships.

HUMPHERY, G. E. WOODS. Air communications in Africa.
Journal of the Royal Society of Arts, Vol. 79, No. 4081 (Feb. 6, 1931), London, pp. 271-299, ills., diagrs., maps.

HUMPHREYS, PAULINE ANNETTE, and GERTRUDE HOSEY. Romance of the airman.
Boston, Ginn and Company, 1931, pp. xviii, 566, ills.

HUNTINGTON, DWIGHT. Adequate visibility for planes.
Aero Digest, Vol. 18, No. 6 (June 1931), New York, pp. 52-53, ills.

HUNTINGTON, DWIGHT. Light plane cost problems.

Aero Digest, Vol. 18, No. 3 (March 1931), New York, pp. 54-55, 144-148, illus.

— Safety for the light airplane.

Aero Digest, Vol. 19, No. 2 (Aug. 1931), New York, pp. 46-48, 119, illus.

— Welcome the mosquito fleet.

Aero Digest, Vol. 18, No. 2 (Feb. 1931), New York, pp. 56-57, 126, illus.

HURTTIG, BENNO. Bericht über die Flugeigenschaften der "Kassel 25."

Luftschau, 4. Jahrg., Nr. 14 (24. Juli 1931), Berlin, p. 20.

HUSUN. The "Husun" track computer.

Flight, No. 1163, Vol. 23, No. 15 (April 10, 1931), London, pp. 321-322, illus.

HUTTON, C. T. *See* Ower, E., and C. T. Hutton: The drag of small streamline bodies.

— *See* Ower, E., and C. T. Hutton: Interference of a streamline nacelle on a monoplane wing.

— *See* Ower, E., and C. T. Hutton: Investigation of the boundary layers and the drags of two streamline bodies.

HYDRAULICS. *See* Rothrock, A. M.: Hydraulics of fuel injection pumps for compression-ignition engines.

— *See* Szymański, Piotr: Ecoulement plan du fluide à travers une palissade de segments rectilignes.

HYDRODYNAMICS. Hydrodynamics and aerodynamics.

Mech. Eng., Vol. 53, No. 12 (Dec. 1931), New York, p. 891.

— *See* Alayrac, Antoine Charles: Étude des écoulements irrotationnels dans l'espace à trois dimensions.

— *See* Bénard, Henri: Nouvelles installations pour l'étude des sillages à l'Institut de Méchanique des Fluides.

— *See* Camichel, C., et P. Dupin: Hydrodynamique. Sur les divers modes de construction des filets a l'entrée d'un ajutage.

— *See* Crausse, E., et J. Baubiac: Sur l'application d'une méthode d'enregistrement à l'étude des tourbillons se produisant dans les liquides.

— *See* Crausse, E., et J. Baubiac: Sur les tourbillons secondaires se produisant à l'aval d'un obstacle immergé dans un liquide.

— *See* Dupin, P., et Trissé-Soldier: Hydrodynamique.—Sur les tourbillons alternés de Benard-Karman et la loi de similitude dynamique de Reynolds.

— *See* Eck, Bruno: Strömungslehre an hand von strömungsbildern; darstellung der wichtigsten strömungsvorgänge aus der flugtechnik und dem maschinenbau mit 60 strömungsaufnahmen.

— *See* Epstein, Paul S.: Air resistance of high velocity projectiles.

— *See* Falkenhagen, H.: Klassische Hydrodynamik.

— *See* Gay, Albert Pierre: Recherches sur l'hydrodynamique des liquides visqueux.

— *See* Girault, Maurice: Méthode géométrique de tracés de profils d'ailes et de corps fuselés. Essai sur la viscosité en mecanique des fluides.

HYDRODYNAMICS. *See* Kunz, Jakob: Some examples of dimensional analysis.

— *See* Lamb, H.: *Lehrbuch der Hydrodynamik*.

— *See* Leray, J.: *Hydrodynamique.—Mouvement lent d'un fluide visqueux à deux dimensions limité par des parois fixes*.

— *See* Poncin, Henri: *Hydrodynamique.—Sur le mouvement d'un fluide autour d'une cavitation*.

— *See* Rosenblatt, Alfred: *Hydrodynamique.—Sur le stabilité des mouvements laminaires des liquide visqueux incompressibles*.

— *See* Schröder, Paul: *Ein Übertragungsgesetz der Hydrodynamik und seine Anwendung bei der Untersuchung des Startes von Seeflugzeugen*.

— *See* Tietjens, O.: *Hydro- und aeromechanik nach Vorlesungen von L. Prandtl. Band 2: Bewegung reisbender Flüssigkeiten und technische Anwendungen*.

— *See* Tremblot, R.: *Hydrodynamique experimentale.—Sur l'application des interférences à quelques problèmes d'écoulement à grande vitesse*.

— *See* Wagner, Herbert: *Über die Landung von Seeflugzeugen*.

HYDROPLANES. *See* Pèpe, Paul: *Précis d'hydraviation; cours de l'École Technique d'Aéronautique et de Construcion Automobile*.

HYLANDER, CLARENCE JOHN. *Cruisers of the air; the story of lighter-than-air craft, from the days of Roger Bacon to the making of the ZRS-4.*
New York, The Macmillan Company, 1931, pp. xxiv, 308, ills. diagrs.

I

I.A.R. The "I.A.R." pursuit airplane (Roumanian). A one-place cantilever low-wing monoplane.
National Advisory Committee for Aeronautics, Aircraft Circulars No. 144, May 15, 1931, Washington, May 1931, pp. 3, ills.

I.L.L.S. *See* Stockholm.

IVA:s. IVA:s flygtekniska kommitté.
Flygning, Årg. 9, N:R 7 (Juli 1931), Stockholm, p. 130.

ICE. Tegen ijsaanzetting.
Het Vliegveld, 15de Jaarg., No. 6 (Juni 1931), Amsterdam, p. 196, ills.

— *See* Goldbach, Georg: *Vereisungsgefahr bei Flugzeugen*.

— *See* National Advisory Committee for Aeronautics: *Recherches américaines sur la formation de la glace à bord des avions en vol*.

— *See* Noville, George O.: *Ice on the wings*.

— *See* Schaefer, O. W.: *Is bildning på flygplan*.

— *See* Theodorsen, Theodore, and William C. Clay: *Ice prevention on aircraft by means of engine exhaust heat and a technical study of heat transmission from a Clark Y airfoil*.

ICELAND. The service cruise to Iceland.
Aeroplane, Vol. 40, No. 5 (Feb. 4, 1931), London, pp. 196, 198, ills.

IDAHO. Idaho aeronautics law, air navigation facilities, air marking, licensing and regulation, miscellaneous information. Aeronautics bulletins No. 1 and 2, revised to June 1, 1931.

Payette, Independent Printing Co., 1931, pp. 68, diagrs., map., forms. Aeronautics Bulletin No. 4.

IDE, JOHN JAY. The French Air Ministry.

Airway Age, Vol. 12, Nos. 2, 3 (Feb., Mar. 1931), New York, pp. 149-151, 238-241, illus.

— The Loth system of navigation by rotating radio beacons.

U.S. Air Services, Vol. 16, No. 3 (March 1931), Washington, pp. 29-30, illus.

IDRAC, P. Études expérimentales sur le vol à voile au lieu même d'évolution des grandes oiseaux voiliers (vautours, albatros, etc.); son application au vol à voile humain.

Paris, F. Louis Vivien, 1931, pp. 75, illus., diagrs.

IGNITION. See Darnell, T. H.: The automotive ignition coil.

— See Fenning, R. W., and F. T. Cotton: Experiments on the ignition of gases by sudden compression.

ILLINOIS. Air traffic rules of the State of Illinois prescribed by the Illinois Aero-nautics Commission and effective November 23, 1931.

Springfield, Journal Printing Company, 1931, pp. 9.

IMPERIAL AIRWAYS. The air fleet of Imperial Airways, Ltd.

Flight, No. 1188, 1189, Vol. 23, No. 40, 41 (Oct. 2, 9, 1931), London, pp. 983-986, 1023-1025, illus.

INDIA. Civil aviation in India.

Aeroplane, Vol. 41, No. 19 (Nov. 4, 1931), London, p. 1082.

— De luchtpostdienst met Indië.

Het Vliegveld, 15de Jaarg., No. 1 (Jan. 1931), Amsterdam, p. 4, ill.

— On India and aviation.

Aeroplane, Vol. 41, No. 10 (Sept. 2, 1931), London, pp. 557-564, illus.

— De postvluchten op Indië.

Het Vliegveld, 15de Jaarg., No. 2, 3 (Feb., Maart 1931), Amsterdam, pp. 42, 82-84, illus., map.

— Wat schort er aan den Holland-Indië luchtpostdienst?

Het Vliegveld, 15de Jaarg., No. 1 (Jan. 1931), Amsterdam, pp. 13-16.

— See Great Britain: Convention between His Majesty, in respect of the United Kingdom and of India, and the King of Italy respecting air transport services. Rome, May 16, 1931.

— See Harper, Harry: By air from England to India.

— See Hegener, Henri: Een Zeppelin-dienst op Indië.

— See Köhler, Roosje: Dagboek van een Indië-Holland vlucht.

— See Langley, M.: The Royal Dutch Indian airways.

— See Sacré, H. Walaardt: Een luchtschipdienst Nederland-Indië.

INDIANAPOLIS. See Haynes, H. Gene: Indianapolis municipal airport.

INDICATOR SYSTEMS. See Fisher, Gerhard R.: The way home.

INDUSTRY. See Rentschler, Frederick B.: Glancing back at 1930. The aircraft industry.

INERTIA. *See* Miller, Marvel P., and Hartley A. Soulé: Moments of inertia of several airplanes.

INGLIS, C. E. *See* R. 101: Cause of the loss of R. 101. Conclusions of the Court and a summary of investigations made at the National Physical Laboratory. Experiments and calculations carried out at the National Physical Laboratory (Prepared by Professor C. E. Inglis).

INSECT FLIGHT. Come volano gli insetti.

Riv. Aer., Anno 7, N. 11 (nov. 1931), Roma, pp. 382-389, ills.

INSECTS. *See* Gunn, Donald L.: The function of the air sacs of insects.

INSIGNIA. *See* Birnn, Roland: Army Air Corps insignia.

INSTITUT DE MECHANIQUE DES FLUIDES. *See* Bénard, Henri: Nouvelles installations pour l'étude des sillage à l'Institut de Méchanique des Fluides.

INSTRUMENT BOARD. *See* Cockpit equipment: The brain centre of a modern aircraft. Cockpit equipment of the "Balair" Fokkers.

INSTRUMENT FLYING. On "instrument flying."

Flight, No. 1180, Vol. 23, No. 32 (Aug. 7, 1931), London, pp. 779-781, ills.

— *See* Underhill, E. A.: Pilots under the hood.

INSTRUMENTS. Present status of aircraft instruments. Report prepared by the subcommittee on instruments.

National Advisory Committee for Aeronautics, Report No. 371, Jan. 31, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 26.

— *See* American Society of Mechanical Engineers: Airplane instrument vibration.

— *See* Askania: Le compte-tours Askania à transmission pneumatique à distance.

— *See* Braun: The Braun relative altitude meter.

— *See* Dearborn, C. H., and H. W. Kirschbaum: Maneuverability investigation of the F6C-3 airplane with special flight instruments.

— *See* du Cluzel: Il calcolatore "du Cluzel."

— *See* Goerz-Clementi: Indicatore di rotta Goerz-Clementi.

— *See* Hinman, W. S., Jr.: Automatic volume control for aircraft.

— *See* Houseman, M. R., and G. H. Keulegan: Investigation of damping liquids for aircraft instruments—II.

— *See* Husun: The "Husun" track computer.

— *See* Jones, D. A.: The R. A. E. automatic observer Mark IA.

— *See* Lacmann, Otto: Entzerrungsgerat für nicht ebenes Gelände.

— *See* Lacmann, Otto: Die neue Startmesskammer System DVL-Zeiss.

— *See* Olshevsky, Dmitry: A machine for automatic generation of airfoils.

— *See* Ower, E.: A micromanometer of high sensitivity.

— *See* Peters, H.: Druckmessung.

INSTRUMENTS. *See* Ramsey, Logan C.: Aircraft instruments as a safety factor.

— *See* Ramsey, Logan C.: The pilot and his air speed meter.

— *See* Ramsey, Logan C.: The pilot and his altimeter.

— *See* Reid-Sigrist: The Reid-Sigrist turn indicator.

— *See* Schreiber, Ernst: Messgenauigkeit des Behmloes für Flugzeuge in geringen Flughöhen.

— *See* Sherlock, R. H., and M. B. Stout: An anemometer for a study of wind gusts.

— *See* Speed Indicators: Record engine speed indicators.

— *See* Stark, Howard Cyrus: Blind or instrument flying? Instruction book.

— *See* Stieglitz, Albert: Der DVL-Torsiograph, ein drehschwingungs-Messgerät für Fahrzeugmotoren.

— *See* Tate, George, jr.: Servicing aircraft instruments.

— *See* Turn indicator: A new turn indicator.

— *See* Webb, L. D.: Know your way around.

— *See* Wines, James P.: Instrument maintenance.

INSURANCE. Group insurance at Blackburn's.

Flight, No. 1162, Vol. 23, No. 14 (April 3, 1931), London, pp. 298-299.

— Insurance for pilots.
Western Flying, Vol. 10, No. 5 (Nov. 1931), Los Angeles, Calif., pp. 29-30.

— Life insurance coverage for those who fly.
U.S. Air Services, Vol. 16, No. 11 (Nov. 1931), Washington, D.C., pp. 38-39.

— The new power in aviation insurance.
The Aeroplane, Vol. 41, No. 1 (July 1, 1931), London, pp. 14-16.

— *See* Axe, Leonard H.: Aviation insurance.

— *See* Blum, René: Les assurances aériennes.

— *See* Crowdus, Walter C.: Aviation insurance.

— *See* Franchelli, G.: La situation des assurances "aviation".

— *See* Guinotte, Jules: Aviation insurance.

— *See* K. A.: Will flying invalidate a life insurance policy.

— *See* Kremlick, Kurt J.: A survey of aviation insurance law.

— *See* Prochasson, Roger: Le risque de l'air.

— *See* Stimson, Thomas E., Jr.: One third down. The chief obstacle to financing airplane sales is insurance. This and other problems are discussed in this article.

— *See* Wines, James P.: Reducing fire insurance costs.

INTERCEPTORS. *See* Alston, R. P.: Stalled flight tests on a Bristol fighter fitted with quato control slots and interceptors.

INTERFERENCE. A designer's notes on interference.

Aviation, Vol. 30, No. 2 (Feb. 1931), New York, pp. 111-112, ills.

— *See* Ower, E., and C. T. Hutton: Interference of a streamline nacelle on a monoplane wing.

INTERNATIONAL AERONAUTICAL CONFERENCE. The 32nd International Aeronautical Conference.

Flight, No. 1160, Vol. 23, No. 12 (March 20, 1931), London, p. 259.

INTERNATIONAL AMERICAN CONFERENCE. Commercial aviation. Convention between the United States of America and other American republics. Signed at Habana, February 20, 1928.

Washington, U.S. Government Printing Office, 1931, pp. 11.

U.S. Treaties. Treaty Series No. 840.

Ratification advised by the Senate of the United States, February 20, 1930 (legislative day February 17, 1931). Ratified by the President of the United States, March 6, 1931.

Ratification of the United States of America deposited with the government of Cuba, July 17, 1931. Proclaimed by the President of the United States, July 17, 1931.

INTERNATIONAL AVIATION. *See* Colegrove, Kenneth: A survey of international aviation.

INTERNATIONAL CATERPILLAR CLUB. *See* Dixon, Charles: Tales of the International Caterpillar Club.

INTERNATIONAL COMMISSION FOR AIR NAVIGATION. What the I. C. A. N. is.

Paris, Imprimerie Blondel La Rougery, 1931, pp. 14.

INTERNATIONAL CONGRESS FOR APPLIED MECHANICS. Verhandlungen des 3. Internationalen Kongresses für technische Mechanik. Proceedings of the 3rd International Congress for Applied Mechanics. Comptes rendus du 3ème Congrès International de Mécanique Appliquée. Stockholm 24-29 August 1930. Im Auftrag des Organisationskomitees hrsg. von C. W. Oseen, Waloddi Weibull.

Stockholm, Ab. Sveriges Litografiska Tryckerier, [1931], 3 vols., ills., diagrs.

I.—Hydro- and aerodynamics.

INTERNATIONAL CONGRESS OF AERIAL NAVIGATION. *See* Congrès International de la Navigation Aérienne: Cinquième Congrès International de la Navigation Aérienne, organisé sous les auspices du gouvernement Néerlandais par l'Aéro-Club Royal des Pays-Bas, La Haye, 1-6 septembre 1930.

INTERNATIONAL NICKEL COMPANY. A directory of American aircraft engines. New York, The International Nickel Company, 1931, pp. 69, ills.

INTERNATIONALEN GESELLSCHAFT ZUR ERFORSCHUNG DER ARKTIS MIT LUFTFAHRZEUGEN. *See* Kohl-Larson, Ludwig: Die arktisfahrt sea "Graf Zeppelin", im Auftrage der Internationalen Gesellschaft zur Erforschung der Arktis mit Luftfahrzeugen (Aeroarctic).

INTERNATIONALES FLUG-HANDBUCH. Internationales Flug-Handbuch.

Paris, Imprimerie Crete A.A., 1931, pp. 100, ills.

INTER-PARLIAMENTARY UNION. What would be the character of a new war? Enquiry organised by the Interparliamentary Union.

London, P. S. King & Son., Ltd., 1931, pp. xviii, 411.

Aerial weapons and future wars, by K. A. Bratt and J. F. C. Fuller.

INTERPLANETARY VOYAGES. *See* Biermann, Gerd.: Weltraumschiffahrt? Eine kurze studie des problems.

— *See* Lasser, David: The conquest of space.

INTERPLANETARY VOYAGES. *See* Ley, Willy: *Die fahrt ins weltall.*

IRELAND. Verordnung. Irische Luftfahrtverordnung vom 6. März 1930. Nachrichten für Luftfahrer, 12. Jahrg., Nr. 10-11 (14. März 1931), Berlin, pp. 62-67.

— *See* Allied and associated powers: Protocol amending articles 34 and 40 of the Convention for the Regulation of Aerial Navigation of October 13, 1919. Paris, December 11, 1929. Irish ratification on April 9, 1930.

IRISH FREE STATE. *See* MacSweeney, P. F.: Civil aviation in the Irish Free State.

IRVIN. The Irvin air chute.

Flight, No. 1158, Vol. 23, No. 10 (March 6, 1931), London, pp. 211-213, illus.

— Some Irvin airchute statistics.

Flight, No. 1156, Vol. 23, No. 8 (Feb. 20, 1931), London, p. 167.

IRVING, H. B., A. S. BATSON, and A. L. MAIDENS. Rolling and sideslip experiments on a model slotted biplane of R.A.F. 31 section.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 910-914, diagrs. Rep. Mem. No. 1240. (Ae. 395.)

IRVING, H. B., and A. S. BATSON. Some early model experiments on devices for improving lateral control near the stall.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 819-823, diagrs. Rep. Mem. No. 1251.

— Spinning of a model of the Fairey IIIf seaplane.

Aer. Res. Comm., Rep. Mem., No. 1356, (Ae. 487—T. 2969), June 1930, London, 1931, pp. 15, ill., diagrs., tabls.

IRVING, H. B. *See* Batson, A. S., H. B. Irving, and S. B. Gates: Spinning experiments on a single seater fighter. Part I.—Further model experiments, by A. S. Batson and H. B. Irving; Part II.—Full scale spinning tests, by S. B. Gates.

IRVING AIR CHUTE Co., Inc., and FLOYD SMITH AERIAL EQUIPMENT Co. Claims of patents for parachute are adjudged valid and infringed.

United States Daily, Vol. 5, No. 296 (Feb. 18, 1931), Washington, D.C., pp. 8, 10.

IRWIN, R. RANDALL. How fares the light plane?

Western Flying, Vol. 10, No. 1 (July 1931), Los Angeles, Cal., pp. 33-34.

— The light plane. How the nation's skies will look if the builders of light planes have their wish.

Western Flying, Vol. 9, No. 4 (April 1931), Los Angeles, Cal., pp. 26-29, ill.

— The problem of distribution.

Western Flying, Vol. 10, No. 3 (Sept. 1931), Los Angeles, Cal., pp. 12-14.

ITALIA. *See* Nobile, Umberto: With the "Italia" to the North Pole.

ITALIAANDER, ROLF, So lernte ich Segelfliegen.

Zürich, Leipzig, Orell Füssli Verlag, 1931, pp. 167, illus.

Was Jungens Erzählen, Bd. 12.

ITALY. Annuario 1930. Ministerio dell'Aeronautica. Aviazione civile e traffico aereo.

Roma, Istituto Poligrafico dello Stato Libreria, pp. 278, tabls.

— Annuario 1931. Ministero dell'Aeronautica. Direzione generale dei servizi del materiale e degli aeroporti. Ufficio presagi.

Roma, Istituto Poligrafico dello Stato, Libreria, pp. 303, maps., tabls.

ITALY. Aviazione coloniale.

Riv. Aer.. Anno 7, N. 10 (ott. 1931), Roma, pp. 44-105, ills., maps.

- Carta aeronautica d'Italia, 1:250000, herausgegeben vom Italienischen Aero-Club (R. Aero-Club d'Italia).
Freiburg i. Br., Reise- und Verkehrsverlag, 1930.
- The circuit of Italy.
Flight, No. 1179, 1181, Vol. 23, No. 31, 33 (July 31, Aug. 14, 1931), London, pp. 758, 816-820, ills., map.
- Colle ali d'Italia alla riconquista del Fezzan.
Riv. Aer., Vol. 7, N. 1 (gen. 1931), Roma, pp. 68-119, ills., map.
- De eskader-oceaanvlucht der Italianen.
Het Vliegveld, 15de Jaarg., No. 2 (Feb. 1931), Amsterdam, pp. 57-59, ills.
- Les grandes manœuvres de l'aviation Italienne.
L'Aérophile, 39e, année, No. 10 (15 oct. 1931), Paris, p. 307.
- An Italian helicopter.
Scient. Amer., Vol. 144, No. 2 (Feb. 1931), New York, p. 124, ill.
- The Italian high-speed flight.
Aeroplane, Vol. 40, No 7 (Feb. 18, 1931), London, p. 272.
- Italian squadron's Atlantic cruise.
Flight, No. 1151, Vol. 23, No. 3 (Jan. 16, 1931), London, pp. 50-51, ills.
- Norme per l'iscrizione nell'albo dei fornitori della R. Aeronautica (Estratto dal Giornale Ufficiale della R. Aeronautica, Dispensa 11a-Circolare n. 152).
Roma, Istituto Poligrafico dello Stato, Libreria, 1930, pp. 6. Ministero dell'Aeronautica. Ispettorato di Commissariato Militare.
- Onze hydravions italiens traversent l'Atlantique Sud.
L'Aéronautique, 13me année, No. 140 (jan. 1931), Paris, pp. 5-6, ill.
- I principali tipi isobarici interessanti l'Italia.
Ministero dell'Aeronautica, Direzione Generale dei Servizi del Materiale e degli Aeroporti, Ufficio presagi, Roma, Tip. Vichi & Sparaciari, 1931 A. IX, pp. 11, maps.
- Il Reale Aero Club d'Italia.
Riv. Aer., Anno 7, N. 11 (nov. 1931), Roma, pp. 407-417.
- Registro italiano navale ed aeronautico (R.I.N. ed A.) per la visita e la classificazione delle navi mercantili, dei galleggianti e degli aeromobili commerciali: Libro-registro 1929.
Genova, Libro-registro (tipo-litogr. P. Pellas), 1929, pp. 1300.
- Registro italiano navale ed aeronautico per la visita e la classificazione delle navi mercantili, dei galleggianti e degli aeromobili commerciali. Libro-registro 1931.
Genova, stab. del Registro italiano navale ed aeronautico (arti graf. Pellas), 1931, pp. cxvij, 1212.
- Rome to Rio in formation.
U.S. Air Services, Vol. 16, No. 2 (Feb. 1931), Washington, pp. 35-36, 38, ills.
- Testo unico delle leggi e regolamento sulla requisizione dei quadrupedi e veicoli per il r. esercito, per la r. marina e per la r. aeronautica. Seconda edizione aggiornata a tutto il 21 marzo 1929. (Ministero della guerra; comando del Corpo di stato maggiore).
Roma, Istituto poligr. Stato, Libreria edit. tip., 1931, pp. 106.
- See Bouché, Henri: *Une entreprise aéronautique sans précédent.*

ITALY. *See* Brazil: The Regia Aeronautica in Brazil.

- *See* Cogliolo, Pietro: Codice aeronautico, con appendici di aggiornamento a tutto il 1930.
- *See* Florman, B.: Den stora Italienske eskaderflygningen.
- *See* Great Britain: Convention between His Majesty, in respect of the United Kingdom and of India, and the King of Italy respecting air transport services. Rome, May 16, 1931.
- *See* Great Britain: Exchange of notes between His Majesty's governments in the United Kingdom, Canada, the Commonwealth of Australia, New Zealand, and the Union of South Africa and the Government of India, and the Italian government respecting documents of identity for aircraft personnel. London, April 13, 1931.
- *See* Llave, Joaquin de la: Traversia del oceano por una escuadro de hidros italianos.
- *See* Martelloni, Giovanni F.: Orazione non detta per il volo atlantico dell'aquila di Roma.
- *See* Regia Aeronautica: The triumph of the Regia Aeronautica.
- *See* Rysky, Carlo de: La croisière italienne dans l'Atlantique-Sud.
- *See* Sbernadori, Paolo: Commercial aviation in Italy.
- *See* Schneider trophy: The Schneider contest.
- *See* Silvestri, Armando: L'ultimo dirigible italiano.
- *See* Thornhill, Gertrude: Italy to Brazil 6,450-mile formation flight.
- *See* United States: Air navigation. Arrangement between the United States of America and Italy. Effective by exchange of notes signed October 13 and 14, 1931. Effective October 31, 1931.
- *See* United States Department of State: Air navigation. Arrangement between the United States of America and Italy. Effectuated by exchange of notes signed October 13 and 14, 1931. Effective October 31, 1931.

ITALY. MINISTERO DELL'AERONAUTICA. *See* Zanetti, M., and C. Avarello: Manuale del fotografo d'aeronautica.

J

JACKSON, GEORGE GIBBARD. The book of the air.

London and Glasgow, Collins' Cleartype Press, 1931, pp. 288, illus.

JACOBS, A. M. Photometric tunnel at Wright Field.

Aero Digest, Vol. 19, No. 4 (Oct. 1931), New York, p. 94.

JACOBS, EASTMAN NIXON. The aerodynamic characteristics of eight very thick airfoils from tests in the variable density wind tunnel.

National Advisory Committee for Aeronautics, Report No. 391, July 30, 1931, Washington, U.S. Government Printing Office, 1931, pp. 14, illus., diagrs., tabls.

JACOBS, EASTMAN NIXON, and ROBERT M. PINKERTON. Tests of N.A.C.A. airfoils in the variable-density wind tunnel. Series 43 and 63.

National Advisory Committee for Aeronautics, Technical Notes No. 391, Sept. 15, 1931, Washington, September 1931, pp. 32, diagrs., tabls.

JACOBS, EASTMAN NIXON, and ROBERT M. PINKERTON. Tests of N.A.C.A. airfoils in the variable-density wind tunnel. Series 44 and 64.
National Advisory Committee for Aeronautics, Technical Notes No. 401, Dec. 1, 1931, Washington, December 1931, pp. 31, diagrs., tabls.

— Tests of N.A.C.A. airfoils in the variable-density wind tunnel. Series 45 and 65.
National Advisory Committee for Aeronautics, Technical Notes No. 392, Sept. 22, 1931, Washington, September 1931, pp. 30, diagrs., tabls.

JACOBS, EASTMAN NIXON. Tests of six symmetrical airfoils in the variable density wind tunnel.
National Advisory Committee for Aeronautics, Technical Notes No. 385, July 31, 1931, Washington, July 1931, pp. 18, ill., diagrs., tabl.

JACUŃSKI, JULIAN. Przyrząd do cechowania dysz gaźnikowych.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 2, Warszawa, 1930, pp. 35-36, ill.

— Stroborama.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 6, Warszawa, 1931, pp. 117-119, ill.

JAESCHKE, RUDOLF. Ein Beitrag zur Lösung des Problems der Verkürzung von Start und Landung bei Flugzeugen.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 8. Heft (28, April 1931), München und Berlin, pp. 221-228, ill., diagrs.

JAFFEUX-TISSOT, M. Après les records de durée et de distance.
L'Aérophile, 39e année, No. 4 (15 avril 1931), Paris, pp. 99-100, ill.

JAHRBUCH FÜR LUFTFAHRT. Ergebnisse aus forschung, technik und betrieb herausgegeben von Werner v. Langsdorff.
München, J. F. Lehmanns, 1931, 1932, 3 vols.

JALBERT. See Bradley, W. F.: Jalbert heavy oil engine using carburetor and pre-mixing cylinder under construction for the French air service.

JAMES, THURSTAN. How to see the contest.
Aeroplane, Vol. 41, No. 11 (Sept. 9, 1931), London, pp. 622-624, ill., map.
Schneider trophy.

— A spectator afloat.
Aeroplane, Vol. 41, No. 12 (Sept. 16, 1931), London, pp. 718-724, ill.

JANIK, FRANCISZEK. Obliczanie podwozia samolotu metoda sił jednostkowych.
(Calcul du train d'atterrissage d'un avion par la méthode de forces unitaires).
Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 7, Nr. 36, Warszawa, 1931, pp. 25-42, ill.

— Opis przyrządów rylcowych.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 6, Warszawa, 1931, pp. 120-124, ill.

JAPAN. A Japanese light aircraft.
Flight, No. 1179, Vol. 23, No. 31 (July 31, 1931), London, p. 757, ill.

— The Japanese research institute. The recently opened aeronautical laboratory of Tokyo Imperial University.
Aircraft Engineering, Vol. 3, No. 32 (Oct. 1931), London, pp. 241-243, ill.

— Japanese wind tunnels.
Engineering, Vol. 131, No. 3411 (May 29, 1931), London, pp. 689-690, ill.

— Verkehrsvorschriften.
Nachrichten für luftfahrer, 12. Jahrg., Nr. 52 (26. Dez. 1931), Berlin, pp. 374-375.

JAPAN. Wind tunnels in Japan. Leading particulars and scale drawings of six tunnels used in aerodynamic investigations.

Aircraft Engineering, Vol. 3, No. 26 (April 1931), London, p. 79, illus.

JENKIN, C. F., and G. D. LEHMAN. High frequency fatigue.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 922-956, illus., diagrs., tabls. Rep. Mem. No. 1222. (M. 62.)

JENKIN, J. W. *See* Archbutt, S. L., and J. W. Jenkin: Mechanical properties of pure magnesium and certain magnesium alloys in the wrought condition—(continued).

— *See* Tapsell, H. J., S. L. Archbutt, and J. W. Jenkin: Alloys sub-committee. Aeronautical Research Committee. Mechanical properties of pure magnesium and certain magnesium alloys in the wrought condition (continued). Mechanical properties of an "Electron" alloy.

JENKINS, H. F. Blind flying and some conclusions.

Aeroplane, Vol. 41, No. 8 (Aug. 19, 1931), London, p. 476.

JENNINGS, W. G. "Cornering" at high speeds.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 343-351, diagrs. Reports and Memoranda No. 1381 (Ae. 427.)

— Directional stability of high speed aircraft.

Aer. Res. Comm., Rep. Mem., No. 1340, (Ae. 472), May 1930, London, 1931, pp. 4, diagrs., tabl.

— The effect of span on aircraft performance.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 504-520, diagrs., tabls. Rep. Mem. No. 1276. (Ae. 422.)

— Experiments in lateral control. An account of tests with autoslots and interceptor and spoiling devices on the same aircraft.

Aircraft Engineering, Vol. 3, No. 32 (Oct. 1931), London, pp. 253-254, illus.

— Full scale experiments of high tip speed airscrews. Comparative performance trials of three airscrews of different sections.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 401-406, diagrs., tabl. Rep. Mem. No. 1282 (Ae. 428.)

JENNINGS, W. G., and A. ORMEROD. Full scale experiments on high tip speed airscrews. The effect of thickness of section on airscrew performance.

Aer. Res. Comm., Rep. Mem., No. 1339, (Ae. 471), August 1930, London, 1931, pp. 6, illus., diagrs., tabls.

JENNINGS, W. G. Tests of various lateral controls fitted to a Siskin aircraft.

Aer. Res. Comm., Rep. Mem., No. 1384 (Ae. 509-T. 3077), December 1930, London, 1931, pp. 10, illus., diagrs.

— Variation of power with height. Power factor in relation to international standard atmosphere, with a method of reduction.

Aircraft Engineering, Vol. 3, No. 25 (March 1931), London, pp. 55-56, diagrs.

— *See* Clark, K. W., and W. G. Jennings: Full scale determination of the motion of an Avro aeroplane when stalled.

JET control. *See* Townend, H. C. H.: A study of slots, rings and jet control of the boundary layer.

JET propulsion. *See* Richardson, Edward Gick: Jet propulsion for aircraft.

— *See* Richardson, Edward Gick: Re jet propulsion.

— *See* Whittle, J.: Re jet propulsion.

JOAQUÍN DE LA LLAYE. *See* Autogiro: El viaje más largo hecho en autogiro.

JOHANSEN, F. C. Flow through pipe orifices at low Reynolds numbers.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 224-247, ills., diagrs., tabls. Rep. Mem. No. 1252 (Ae. 402.)

— *See* Lock, C. N. H., and F. C. Johansen: Pressure plotting a streamline body with tractor airscrew running. Part II.—Airscrew in the rear position.

JOHNSON, CHARLES P. Pittsburgh city-county airport.

Aero Digest, Vol. 19, No. 6 (Dec. 1931), New York, pp. 45-46, ills.

JOHNSON, J. B. Dependence of aviation on metallurgy.

Metals & Alloys, Vol. 1, No. 10 (April 1930), New York, pp. 450-454, ills., diagr. tabls.

— Fatigue of aircraft parts.

Aviation, Vol. 30, No. 8, 9 (Aug., Sept. 1931), New York, pp. 462-464, 542-545, ills., diagrs., tabls.

— Progress in aircraft material development.

Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 40-42, ills.

JOHNSON, P. G. What of 1931?

Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Cal., p. 21.

JOHNSON, ROBERT. From the Lakes to the Pacific.

Aviation, Vol. 30, No. 6 (June 1931), New York, pp. 360-363, ills.

— Into the setting sun.

Nat. Aer. Mag., Vol. 9, No. 4 (April 1931), Washington, pp. 9-16, ills.

— The new "Oregon trail."

Nat. Aer. Mag., Vol. 9, No. 8 (Aug. 1931), Washington, pp. 15-16, 25-27, ills.

— Pacific coast on parade.

Nat. Aer. Mag., Vol. 9, No. 6 (June 1931), Washington, pp. 9-11, 15-16, ills.

JOHNSTON, SAMUEL PAUL. *See* Warner, Edward Pearson, and S. Paul Johnston: Aviation handbook.

JOINTS. *See* Boulton, B. C.: Design of riveted joints.

JONES, ARTHUR TABER. The stability of a single file of straight vortices.

Physical Review, 2 ser., Vol. 38, No. 11 (Dec. 1, 1931), Minneapolis, pp. 2068-2070, ills.

JONES, BRADLEY. The airship "Akrone."

U.S. Air Services, Vol. 16, No. 6 (June 1931), Washington, pp. 21-24, ills.

— Aviation.

New York, J. Wiley & Sons, inc., London, Chapman & Hall, Ltd., 1931, pp. ix, 314, ills., diagr.

— The Do-X, or safety first, performance second.

U.S. Air Services, Vol. 16, No. 4 (April 1931), Washington, pp. 23-27, ills.

— A hectic week.

U.S. Air Services, Vol. 16, No. 5 (May 1931), Washington, pp. 17-20, ill.

— How high is up? or Some remarks on altitude measurements.

U.S. Air Services, Vol. 16, No. 7 (July 1931), Washington, pp. 29-31.

— Shrinking the globe.

U.S. Air Services, Vol. 16, No. 8 (Aug. 1931), Washington, 15-19, ports.

JONES, B. MELVILL, and C. E. MAITLAND. Records of the lateral motions of a stalled Bristol fighter aeroplane with slots upon the upper wing tips. Experiments made in the Cambridge University Air Squadron.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 824-831, diagrs. Rep. Mem. No. 1286 (Ae. 436).

JONES, D. A. The R.A.F. automatic observer Mark IA.

Aer. Res. Comm., Rep. Mem., No. 1405 (Ae. 526-T. 3108), January 1931, London, 1931, pp. 6, ill.

JONES, ERNEST. Half of air accidents avoidable?

Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 49, 132.

— What of the giant airplane?

Aero Digest, Vol. 18, No. 4 (April 1931), New York, pp. 50-53, ill.

JONES, E. T. The distribution of pressure over a section of an airscrew blade in flight, and the variation of lift coefficient with the speed of the section.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 361-383, ill., diagrs., tabls. Rep. Mem. No. 1256 (Ae. 405).

— Drag and heat dissipation of three radiator systems.

Aer. Res. Comm., Rep. Mem., No. 1366 (Ae. 493-T. 3021), August 1930, London, 1931, pp. 14, ill., diagrs., tabls.

— Flight tests on an Atlas fitted with automatic slots connected with the ailerons and some data relevant to the design of autoslots for R.A.F. 28 section wing.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 843-850, diagrs. Rep. Mem. No. 1260 (Ae. 409).

— The full scale determination of the lateral resistance derivatives of the Bristol fighter aeroplane. Part III.—The determination of the rate of roll derivatives.

Aeronautics, Tech. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 729-735, ill., diagrs., tabls. Rep. Mem. No. 1270 (Ae. 416).

JONES, E. T., and K. W. CLARK. Full scale maximum lift coefficient of R.A.F. 28 section wing.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, Lonhon, 1931, pp. 345-346, diagrs. Rep. Mem. No. 1269 (Ae. 415).

JONES, E. T. The lateral stability of the Gloster IIIB seaplane with controls fixed and with directional control.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, pp. 218-224, tabl. R.A.E. Report No. B.A. 684.

JONES, E. T., and R. P. ALSTON. Longitudinal control and stability when stalled.

Aer. Res. Comm., Rep. Mem., No. 1367 (Ae. 494-T. 3022), September 1930, London, 1931, pp. 8, diagrs.

JONES, E. T. Measurement of incidence and speed of the S. 5 seaplane on alighting.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 340-342. R.A.E. Report No. B.A. 793.

— Measurement of landing loads.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 677-684, ill., diagrs., table. Rep. Mem. No. 1246 (Ae. 399).

JONES, E. T., and C. E. MAITLAND. Stalled flight tests of a Moth fitted with auto control slots and interceptors.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 851-853, diagrs. Rep. Mem. No. 1292 (Ae. 441).

JONES, H. A. The war in the air: Being the story of the part played in the great war by the Royal Air Force; Vol. 3.

New York, London, Oxford University Press, 1931, pp. 433, ill.

JONES, R., and A. H. Bell. Biplane fins on a model of R. 101.

Aer. Res. Comm., Rep. Mem., No. 1379 (Ae. 504-T. 3010), October 1930, London, 1931, pp. 13, ill., diagrs., tabls.

JONES, R, and A. H. Bell. Experiments on models of a compressed air wind tunnel.
Aer. Res. Comm., Rep. Mem., No. 1355 (Ae. 486-T. 2606, T. 3011), April 1931, London, 1931, pp. 22, diagrs., tabl.

JONES, WEBSTER A. Barnstorming De Luxe.
Western Flying, Vol. 10, No. 3 (Sept. 1931), Los Angeles, Calif., pp. 23, 62.

JONES, W. E. F. Aircraft in China.
Aeroplane, Vol. 41, No. 18 (Oct. 28, 1931), London, pp. 1026-1028, ill.

JOUKOWSKI. *See* Fage, A., V. M. Falkner, and W. S. Walker: Experiments on a series of symmetrical Joukowski sections.

— See Stanton, T. E.: On the distribution of pressure over a symmetrical Joukowski section at high speeds.

JOUKOWSKI, N. *Aérodynamique*.
 Paris, Gauthier-Villars, 1931.
 Translated from the Russian by S. Drzewiecki, Second edition, revised and annotated by W. Margoulis.

JOUX, ÉTIENNE JOSEPH FRANÇOIS. Un dirigeable militaire: "L'Adjudant-Vincenot" (1911-1916).
 Paris, E. Blondel la Rougery, 1931, pp. 47, ills., map.

JOYCE, TEMPLE N. Airplane design in relation to tactical requirements.
U.S. Air Services, Vol. 16, No. 7 (July 1931), Washington, pp. 37-40, 50.

JUDD, NEIL M. The airplane aids the archaeologist in reconstructing an ancient civilization.
National Aeronautic Magazine, Vol. 9, No. 1 (Jan. 1931), Washington, pp. 21, 24-25, 27, 29, ills.

JUDGE, ARTHUR, WILLIAM. Automobile and aircraft engines.
 London, New York, Sir I. Pitman & Sons, Ltd., 1931, pp. ix, 845, ills., diagrs. 2d edition, revised and enlarged.

— The testing of high speed internal combustion engines.
 London, Chapman & Hall, Ltd., 1931, pp. 459, ills. 2d edition, revised and enlarged.

JUGOSLAVIA. Jugoslawien. Belgrad, Verordnung.
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 20 (16. Mai 1931), Berlin, pp. 135-136.

JULLIOT, CH. L. L'aviation sanitaire devant la XIV^e Conférence internationale de la Croix rouge Bruxelles 6-11 octobre 1931.
 Paris, Chez A. Pedone.

JUNKERS. Un avion de fret long-courrier; le Junkers Ju. 52.
L'Aéronautique, 13me année, No. 143 (avril 1931), Paris, p. 124, ills.

— Flight in the stratosphere.
Scient. Amer., Vol. 144, No. 2 (Feb. 1931), New York, pp. 127, 131.

— A flying lorry.
Flight, No. 1157, Vol. 23, No. 9 (Feb. 27, 1931), London, pp. 186-187. ills.

— Junkerjättens Europa-runt-flygning.
Flygning, Årg. 9, N:R 1 (Febr. 1931), Stockholm, pp. 32, 36, ill.

— Junkers "Ju 52." Grossfrachtflugzeug für Langstrecken.
Luftschau, 4. Jahrg., Nr. 4 (24. Feb. 1931), Berlin, p. 28, ill.

JUNKERS. The Junkers "Jumbo 4" takes the air.
 Flight, No. 1166, Vol. 23, No. 18 (May 1, 1931), London, p. 375, ills.

— Junkers-Jumo 4, der erste Dieselflugmotor der Welt.
 Luftschau, 4. Jahrg., Nr. 10 (24. Mai 1931), Berlin, p. 78, ills.

— The Junkers "Jumo 4" heavy-oil aircraft engine.
 Mech. Eng., Vol. 53, No. 11 (Nov. 1931), New York, pp. 811-813, ills., diagr.

— Il motore a olio pesante per aviazione, Junkers "Jumo 4."
 L'Aerotecnica, Vol. 11, No. 6-7 (giug.-lugl. 1931), Roma, pp. 789-802, ills.

— Das Stratosphärenflugzeug von Junkers.
 Die Umschau, 35. Jahrg., Heft 16 (18. April 1931), Frankfurt a. M., p. 319.

— See Germany: A German freight-carrier. A description of the new Junkers Ju. 52 with B.M.W. VII or Leopard engine.

— See Rozendaal, John: Berlijnsche brief.

JUNKERS, HUGO. See Fisher, Joachim: Ein Wendepunkt im Luftverkehr.

— See Schäffer, Ernst: Glück ab; bahnbrecher der lüfte.

JUNKERS-WERBUNG. Flugzeugbau, motorenbau, appareatebau.
 Dessau, C. Dunnhaupt, 1931, pp. 68, ills.

JURETIGH DJALMA. Le esperienze del generale Balbo e le macchine aeree della navigazione di lungo corso. Conferenza tenuta il giorno 30 marzo 1931, IX, nell'aula magna della r. Scuola industriale "Giacomo da Udine" in Udine.
 Udine, tip. Del Bianco e figlio, 1931.

K

K., A. The autogiro.
 Scient. Amer., Vol. 144, No. 3 (March 1931), New York, pp. 192-194, ills.

— The aviator's artificial horizon.
 Scient. Amer., Vol. 145, No. 6 (Dec. 1931), New York, pp. 404-406, ills.

— A convenient parachute attachment.
 Scient. Amer., Vol. 145, No. 3 (Sept. 1931), New York, p. 194, ills.

— A debate about the autogiro.
 Scient. Amer., Vol. 145, No. 5 (Nov. 1931), New York, p. 337, ill.

— Deck flying.
 Scient. Amer., Vol. 145, No. 2 (Aug. 1931), New York, pp. 408-409, ills.

— Eine Chronik des Fluggedankens bis zum Luftverkehr im Dienste der Völkerverbindung.
 Berlin, Verlag Licht und Schatten.

— A giant wind tunnel.
 Scient. Amer., Vol. 145, No. 2 (Aug. 1931), New York, p. 125, ill.

— Improving rules for airplane safety.
 Scient. Amer., Vol. 145, No. 5 (Nov. 1931), New York, pp. 336-337.

— The latest in wind vanes.
 Scient. Amer., Vol. 145, No. 1 (July 1931), New York, pp. 50-51, ills.

— New airplane test kit.
 Scient. Amer., Vol. 145, No. 2 (Aug. 1931), New York, pp. 124-125, ill.

— A novel plane.
 Scient. Amer., Vol. 145, No. 3 (Sept. 1931), New York, p. 192, ill.
 Single wheel plane designed by Charles Ward Hall.

— Photography during a parachute jump.
 Scient. Amer., Vol. 145, No. 6 (Dec. 1931), New York, pp. 403-404.

K., A. A rival of the autogiro?
Scient. Amer., Vol. 145, No. 5 (Nov. 1931), New York, p. 336, ill.

— Seaplane bases.
Scient. Amer., Vol. 145, No. 3 (Sept. 1931), New York, pp. 192-193, ill.

— Seaplane float test basin.
Scient. Amer., Vol. 145, No. 2 (Aug. 1931), New York, p. 124, ill.

— A sportsman's airship.
Scient. Amer., Vol. 144, No. 2 (Feb. 1931), New York, p. 126, ill.

— A submarine aircraft carrier.
Scient. Amer., Vol. 145, No. 6 (Dec. 1931), New York, p. 403, ill.

— Trial flights of the "Akron."
Scient. Amer., Vol. 145, No. 5 (Nov. 1931), New York, p. 336.

— Will flying invalidate a life insurance policy.
Scient. Amer., Vol. 145, No. 3 (Sept. 1931), New York, p. 194.

— The world's largest amphibian.
Scient. Amer., Vol. 145, No. 6 (Dec. 1931), New York, pp. 406, 408, ill.

KAFTAL, ANDRÉ. Réparation des dommages causes aux voyageurs dans les transport aériens.
Paris, Recueil Sirey, 1930, p. 48.

KAHN. See Dupuy, P.: The "kahn" system of map projection.

KAHN, L. Aircraft and naval technique. A study of the relationship existing between the two in design and operation.
Aircraft Engineering, Vol. 3, No. 31 (Sept. 1931), London, pp. 221-224, diagrs.

KAISER, J. See Sattler, C. H., und J. Kaiser: Berufsawhl und Auge.

KÁRMÁN, THEODORE VON. Mechanical similitude and turbulence.
National Advisory Committee for Aeronautics, Technical Memorandums No. 611, March 19, 1931, Washington, March 1931, pp. 19, diagrs.

— Die Seitenwege der luftfahrt.
Zeitschr. Flugt. Motorluftsch., 22. Jahrig., 16. Heft (28. Aug. 1931), Munchen und Berlin, pp. 481-488, ills., diagrs.

KARSTEN, A. Flugzeuge fuer den Krankendienst.
Gesundheits-Ingenieur, Bd. 54, Nr. 18 (2. Mai 1931), Berlin, pp. 280-283, ills.

KASSEL. Das Hochleistungs-Segelflugzeug "Kassel 25."
Luftschau, 4. Jahrg., Nr. 17 (10. Sept. 1931), Berlin, pp. 55-56, ill.

— Das neue Übungs-Segelflugzeug "Kassel 20."
Luftschau, 4. Jahrg., Nr. 11 (10. Juni 1931), Berlin, p. 87, ill.

— See Hurtig, Benno: Bericht über die Flugeigenschaften der "Kassel 25."

KEAN, JOHN S. Racing seaplanes.
Aviation, Vol. 30, No. 9 (Sept. 1931), New York, pp. 518-521, ills.

KEAR, FRANK GREGG, and GERALD HILES WINTERMUTE. A simultaneous radio-telephone and visual range beacon for the airways.
United States Bureau of Standards, Journal of Research, Vol. 7, No. 2 (Aug. 1931), Washington, pp. 261-287, ill.

KEHLER, VON. CHRISTOPH VON KROGH.
Luftschau, 4. Jahrg., Nr. 18 (24. Sept. 1931), Berlin, p. 62.

KEISTER, P. H. *See* Thompson, Floyd La Verne and P. H. Keister: Lift and drag characteristics of a cabin monoplane determined in flight.

KELLETT. The Kellett autogiro.
National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, pp. 8, 62, ill.

— Kellett side by side autogiro.
Aero Digest, Vol. 19, No. 1 (July 1931), New York, pp. 70-72, ill.

KENDALL, WILLIAM. Price—Its effect on sales.
Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Cal., pp. 23-25, tabs.

KENNEDY, NORMAN W. *See* Hope, W. Lawrence, and Norman W. Kennedy: A complete course for the commercial flying license.

KEPNER, WILLIAM E. Flight of RS-1, San Antonio, Tex., to Scott Field, Ill.
Monthly Weather Review, Vol. 59, No. 10 (Oct. 1931), Washington, pp. 386-388.

KERGUISTEL, JAN. Comparaison des avions—Abaque des plafonds.
L'Aéronautique, 13me année, No. 142, *L'Aérotechnique*, 9e année, No. 99 (Mars 1931), Paris, pp. 89-92, diagrs.

KERMODE, A. C. *See* Engineering: An introduction to aeronautical engineering. For students engaged in all branches of aeronautical work. Vol. 1: Mechanics of flight.

KERR, P. S. Fuel flowmeters designed to measure mass flow. With appendices by D. Rolinson, R. J. Penn and W. C. Cooper.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1272-1292, diagrs., table. *Rep. Mem. No. 1245* (E. 31).

KESSLER, RAMON WILKE. The right to solo, a collection of the best airplane stories for boys and girls.
New York, E. P. Dutton & Co., inc., 1931, pp. 218, ill.

KEULEGAN, G. H. *See* Houseman, M. R., and G. H. Keulegan: Investigation of damping liquids for aircraft instruments—II.

KIDSTON, GLEN. *See* Grey, Charles Grey: On a last testament.

KIEL, HEINRICH GEORG. Static longitudinal stability of "Ente" airplanes.
National Advisory Committee for Aeronautics, Technical Memorandums No. 612, March 26, 1931, Washington, March 1931, pp. 27, diagrs.

KING, ALFRED. *See* Hübner, Walter: Dr.-Ing. Alfred King starb am 29. Januar 1931 den Fliegertod.

KING, R. O., and H. MOSS. Detonation and lubricating oil.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1249-1271, diagrs., tabs. *Rep. Mem. No. 1318* (E. 35).

— Detonation, mineral lubricating oils and blended fuels.
Aer. Res. Comm., Rep. Mem., No. 1362 (E. 44-I.C.E. 782), July 1930, London, 1931, pp. 11, diagrs.

— Detonation, spark-plug position, and engine speed.
Engineering, Vol. 132, No. 3421 (Aug. 7, 1931) London, pp. 177-180, ill., diagrs.

KING'S CUP. The King's Cup.
Flight, No. 1160, Vol. 23, No. 12 (March 20, 1931), London, p. 246.

— King's Cup Air Race, 1931.
Aeroplane, Vol. 40, No. 3 (Jan. 21, 1931), London, pp. 90, 92, 94.

— "Kings Cup" 1931.
Luftschau, 4. Jahrg., Nr. 10 (24. Mai 1931), Berlin, p. 76.

KING'S CUP. The King's Cup race.

Aeroplane, Vol. 41, No. 4, 5 (July 22, 29, 1931), London, pp. 219-226, 261-276, ill.
Flight, No. 1177, Vol. 23, No. 29 (July 17, 1931), London, p. 687, map.

— The King's Cup race 1931.

Flight, No. 1178, 1179, Vol. 23, No. 30, 31 (July 24, 31, 1931) London, pp. 711-722, 745-757,
ills., parts., map.

— King's Cup under 10 Ar.

Flygning, Årg. 9, N: R 9 (Sept. 1931), Stockholm, pp. 170-171, 185, ills.

— See Heston: The race as seen at Heston.

KINGSFORD, A. R. Night raiders of the air: being the experiences of a night flying
pilot, who raided Hunland on many dark nights during the war.
London, J. Hamilton Ltd., 1930, pp. 222, ills.

KINNER. See Thompson, James G.: Engine service and maintenance. Part IV—
The Kinner K-5.

KIPFER, PAUL. See Piccard, Auguste: Le record d'altitude battu par un ballon.

— See Piccard, Auguste, y Paul Kipfer: Tentativas del professor Piccard y
otros esfuerzos para el conocimiento de la estratosfera.

KIRSCHBAUM, HOWARD WILLIAM. See Dearborn, C. H., and H. W. Kirschbaum:
Maneuverability investigation of an F6C-4 fighting airplane.

— See Dearborn, C. H., and H. W. Kirschbaum: Maneuverability investiga-
tion of the F6C-3 airplane with special flight instruments.

— See Thompson, Floyd La Verne, and H. W. Kirschbaum: The drag char-
acteristics of several airships determined by deceleration tests.

KIRSCHNER, A. Deutschlands Mitarbeit am Aufbau der griechischen Zivilluft-
fahrt.

Luftschau, 4. Jahrg., Nr. 13 (10. Juli 1931), Berlin, p. 2.

KIRSTEN, FREDERICK KURT, HAROLD LAMONT ADAMS and RICHARD LEWIS
STITH. Venturi wind tunnel number 1—

Seattle, University of Washington, 1931, ills., tabls., diagrs.

Washington University, Engineering Experiment Station, Engineering Experiment Station
Series, Bulletin No. 57.

KJELLSON, HENRY. Belysning av flyglinjer och flyghamnar.

Flygning, Årg. 9, N: R 4 o. 5 (April-Maj 1931), Stockholm, pp. 88-89, 92, ills.

— I L I S utställningen.

Flygning, Årg. 9, N: R 6 (Juni 1931), Stockholm, pp. 110-113, 126, ills.

— Westland-Hill's "Pterodactyl" IB.

Flygning, Årg. 9, N: R 2 (Febr. 1931), Stockholm, p. 29, ills.

KLEFFEL, WALTHER. Abschied vom Schneider-Pokal.

Luftschau, 4. Jahrg., Nr. 19 (10. Okt. 1931), Berlin, p. 77.

— Dem "Flieger von Tsingtau."

Luftschau, 4. Jahrg., Nr. 3 (10. Feb. 1931), Berlin, p. 19.

— Der Segelflug; ein ruhmeskapitel aus der geschichte des menschenfluges.
Für die Rhön-Rossitten-Gesellschaft Geschrieben.

Berlin, Weidmann, 1930, pp. 179, ills.

150 NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

KLEIN, ISRAEL. How the Navy's giant airship Akron will go to battle in time of war.

The Sunday Star, Nov. 23, 1930, Washington, D. C., pp. 12-13, 14, ills.

KLEIN, JULIUS. A post-slump decalogue.

Western Flying, Vol. 9, No. 3 (March 1931), Los Angeles, Calif., p. 23.

KLEMIN, ALEXANDER. Electrical aids to blind flying.

Scient. Amer., Vol. 145, No. 5 (Nov. 1931), New York, pp. 324-326, ills.

— The National Aircraft Show.

Scient. Amer., Vol. 145, No. 1 (July 1931), New York, pp. 26-28, ills.

KLEMIN, ALEXANDER, and B. P. RUFFNER. A new type of gyroplane. Wind tunnel researches and full scale tests with a gyroplane with rigidly connected feathering rotor blades.

Aircraft Engineering, Vol. 3, No. 34 (Dec. 1931), London, pp. 305-306, 320, ills., tabls.

KLEMIN, ALEXANDER. Recent aircraft engineering research. Wide range of work reported at Langley Field Conference in May—Particulars of the new seaplane towing channel, 2040 ft. long at Langley Field, and also of the recently completed wind tunnel at that place, the only one yet built in which full-sized airplanes can be tested.

Mech. Eng., Vol. 53, No. 8 (Aug. 1931), New York, pp. 594-598, ills.

— Sikorsky's contribution to huge amphibians the S-40.

Aviation Engineering, Vol. 5, No. 4 (Nov. 1931), Washington, N.J., pp. 18-21, ills., diagrs., tabls.

— See New York University: Technical notes of the Daniel Guggenheim School of Aeronautics, College of Engineering, New York University. No. 1—

KLEMPERER, W. Luftschiff-Messtechnik.

Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 3. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1930, pp. 133-208, ills., diagrs.

KNAUSS, ROBERT. Erster Lufthansa-Postflug nach Bagdad.

Luftschau, 4. Jahrg., Nr. 2, 3 (24. Jan. 10, Feb. 1931), Berlin, pp. 10-11, 22.

KNAUTH, ARNOLD W. Federal airship foreign commerce bill.

Journal of Air Law, Vol. 2, No. 2 (April 1931), Chicago, pp. 202-206.

KNAUTH, ARNOLD W., ALLEN J. FURLOW, HENRY J. FURLOW, HENRY G. HOTCHKISS and EMORY H. NILES. 1930 United States aviation reports. Baltimore, 1930, pp. xx, 573.

KNAUTH, ARNOLD W., HENRY G. HOTCHKISS and EMORY H. NILES. United States aviation reports 1931.

Baltimore, U.S. Aviation Reports, inc., 1931, pp. xxx, 526.

KNERR H. C., and H. A. BACKUS. Development of steel wing beams for aircraft. Iron Age, Vol. 127, No. 9 (Feb. 26, 1931), Middletown, N.Y., pp. 708-710, ills.

KNIGHT, MONTGOMERY, and CARL J. WENZINGER. Rolling moments due to rolling and yaw for four wing models in rotation.

National Advisory Committee for Aeronautics, Report No. 379, May 9, 1931, Washington, U.S. Government Printing Office, 1931, pp. 27, ills., diagrs., tabls.

KNIGHT, MONTGOMERY, and RICHARD W. NOYES. Span-load distribution as a factor in stability in roll.

National Advisory Committee for Aeronautics, Report No. 393, Nov. 10, 1931, Washington, U.S. Government Printing Office, 1931, pp. 17, ills., diagrs., tabls.

KOBER, THEODORE. See Gehlen, Karl: Nachruf. Theodore Kober.

KÖHLER, ROOSJE. Dagboek van een Indië-Holland vlucht.
Het Vliegveld, 15de Jaarg., No. 10, 11, 12 (Oct. Nov. Dec. 1931), Amsterdam, pp. 362-363, 395-397, 437-439, ills.

— See Geerligs, Bert Prinsen: Een praatje met Mevrouw Roosje Köhler.

KOHL-LARSON, LUDWIG. Die arktisfahrt des "Graf Zeppelin", im auftrage der Internationalen Gesellschaft zur Erforschung der Arktis mit Luftfahrzeugen (Aeroarctic).
Berlin, Union deutsche verlagsgesellschaft, 1931, pp. 202, ills., map.

KOHRS, W. Nautilus und Zeppelin.
Die Umschau, 35. Jahrg., Heft 23 (6. Juni 1931), Frankfurt a.M., pp. 449-450.

KONECZNY, W. E. See Tousignant, S. M., and W. E. Koneczny: Grapho-analytical method of least work.

KOPPEN, OTTO C. Progress of research and invention.
Aviation, Vol. 30, No. 1 (Jan. 1931), New York, p. 39.

KOPPENHÖFER, A. Versuchsentwicklung im Metallgerüstbau.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 14. Heft (28. Juli 1931), München und Berlin, pp. 421-425, ills.

KORSA. Il Korsa T. 2.
Riv. Aer., Anno 7, n. 2 (feb. 1931), Roma, pp. 350-351, ills.

KOYEMANN, ALFRED. Flugmechanische Beziehungen zwischen Fluggeschwindigkeit, Flugkosten und Flugweite und ihre Abhängigkeit von der Widerstandsfläche des Flugzeuges.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 11. Heft (15. Juni 1931), München und Berlin, pp. 329-332, tabls.

— Vergleichszahlen für Flugzeuge; Wirtschaftlichkeitsgrad und Geschwindigkeitsgrad.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 10. Heft (18. Mai 1931), München und Berlin, pp. 300-301, tabl.

KOZANECKI, STEFAN. Badania świerka górskiego z Worochty. (Recherches sur le sapin provement des montagnes de Worochta).
Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin, No. 7, Nr. 33, Warszawa, 1931, pp. 5-9, diagrs.

— Badanie świerka górskiego z Worochty. Part II.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 5, (Nr. 23), Warszawa, 1931, pp. 70-78, tabls. See Łaski, Jarosław for Part I.

KRAMER, GEORGE N. Repairing and service for airplanes.
Airway Age, Vol. 13, No. 1 (Jul. 4, 1931), New York, pp. 30-32, ills.

KRASIŃSKI, HUBERT. See Peter, Franciszek, Stanisław Olszewski, Józef Dziewoński, i Hubert Krasiński: Badania nad zastosowaniem mieszanki alkoholowej do silnika Lorraine-Dietrich 450 km.

KRAUSE, DANIEL EDWARD. See McCaffery, Richard Stanislaus, and Daniel Edward Krause: Air discharge of circular tuyeres.

KREDEL, ERNST. Deutsche verkehrsflug-aktiengesellschaft.
Nürnberg-Fürth, Berlin, "Organisation" verlagsges., 1931.

— Luftverkehr. Deutsche Verkehrsflug-Aktiengesellschaft Nürnberg-Fürth.
Berlin, Organisation-Verlagsgesellschaft m.b.H. (S. Hirzel), 1931, pp. 82, ills.

KRELL, O. Druckverteilung an der luftumströmten Kugel.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 4. Heft (28. Feb. 1931), München und Berlin, pp. 97-105, ills., diagrs.

KREMLICK, KURT J. A survey of aviation insurance law.
Journal of Air Law, Vol. 2, No. 4 (Oct. 1931), Chicago, pp. 524-538.

KROGH, CHRISTOPH VON. *See* Kehler, von: Christoph von Krogh.

KROMER, HUGO H. Das kleine Leistungs-Segelflugzeug "Grunau-Baby."
Luftschau, 4. Jahrg., Nr. 24 (24. Dez. 1931), Berlin, pp. 138-139, illus.

KRONFELD, ROBERT. Wärmesegeln, ein neuer Flugsport.
Luftschau, 4. Jahrg., Nr. 17 (10. Sept. 1931), Berlin, p. 54.

KRÜGER, KURT, und HANS PLENDL. Horizontale Strahlungskennlinie einer Kurzwellen-Richtantenne mit gespeistem Reflektor.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 629-632, illus., diagrs.

KRUESI, G. G. A new homing device for blind flying.
Aero Digest, Vol. 18, No. 3 (March 1931), New York, pp. 39, 140-142, illus.

KRUSE, HELMUTH. A study of curvilinear flight.
National Advisory Committee for Aeronautics, Technical Memorandums No. 615, April 9, 1931, Washington, April 1931, pp. 22, illus., diagrs., tabs.

— Untersuchung des Kurvenfluges.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 2. Heft (28. Jan. 1931), München und Berlin, pp. 37-44, ill., diagrs., tabs.

KUBO, KEI. *See* Sezawa, Katsutada, and Kei Kubo: The buckling of a cylinder shell under torsion.

KÜHN, FRITZ. Erhöhung der Sicherheit von Luftfahrzeugen durch Bekämpfung der Brandgefahr.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 362-374, illus.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 7. 8. Heft (14., 28. April 1931), München und Berlin, pp. 197-206, 241-224, illus., tabs.

— Fire prevention on aircraft.
National Advisory Committee for Aeronautics, Technical Memorandums No. 628, July 9, 1931, Washington, July 1931, pp. 23, illus., tabs.

KÜSSNER, HANS GEORG. Beanspruchung von Flugzeugflügeln durch Böen.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 83-100, illus., diagrs.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 19. 20. Heft (14. 28. Okt. 1931), München und Berlin, pp. 579-586, 605-615, illus., diagrs., tabs.

— Optico-photographic measurements of airplane deformations.
National Advisory Committee for Aeronautics, Technical Memorandums No. 610, March 12, 1931, Washington, March 1931, pp. 16, illus., diagrs.

KUIPERS, C. De Armstrong-Siddeley vliegtuigmotoren.
Het Vliegveld, 15de Jaarg., No. 2-3 (Feb.-Maart 1931), Amsterdam, pp. 43-45, 79-81, illus., diagrs., tabs.

— Nieuwe Lorraine-Dietrich-motoren.
Het Vliegveld, 15de Jaarg., No. 6 (Juni 1931), Amsterdam, pp. 193-195, illus., tabl.

KUNZ, JAKOB. Some examples of dimensional analysis.
Physical Review, Vol. 37, No. 12 (June 15, 1931), Minneapolis, p. 1701. (Abstract).

KURTZ, OSKAR. Über die mechanischen Betriebsbeanspruchungen des Vergaserflugmotors.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 309-315, illus., diagrs., tabs.

KURZ, GERHARD. Measurement of visibility from the pilot's cockpit on different airplane types.

National Advisory Committee for Aeronautics, Technical Memorandums No. 646, Nov. 12, 1931, Washington, November 1931, pp. 17, ills., diagrs.

— Messung der Sicht vom Führersitz verschiedener Flugzeugmuster.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 6. Heft (28. März 1931), München und Berlin, pp. 167-176, ills., diagrs.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 727-736, ills., diagrs.

L

L., P. Caractéristiques techniques générales.

L'Aéronautique, 13^{me} année, No. 144 (mai 1931), Paris, pp. 156-163, ills.

— Un moteur de Coupe Schneider 1929; le 1600 HP Hispano-Suiza.

L'Aéronautique, 13^{me} année, No. 146 (juil. 1931), Paris, pp. 238-243, ills.

— Les nouveaux systèmes Charlestop de transmission et de freinage.

L'Aéronautique, 13^{me} année, No. 146 (juil. 1931), Paris, pp. 261-263, ills.

— Nouvelles pompes à essence.

L'Aéronautique, 13^{me} année, No. 145 (juin 1931), Paris, pp. 224-228, ills., diagrs.

— Le poste de commande de Bernardi à gouvernes conjuguées.

L'Aéronautique, 13^{me} année, No. 150 (nov. 1931), Paris, pp. 382-383, ills.

LABÒ, ADELAIDE. La chimica metallurgica nell'industria aeronautica.

Riv. Aer., Anno 7, n. 7 (luglio 1931), Roma, pp. 30-46, ills., diagrs., tabls.

LACMANN, OTTO. Entzerrungsgerat für nicht ebenes Gelände.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 580-582, ills.

— Fortschritte auf dem Gebiete der Photogrammetrie.

Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 33 (15. Aug. 1931), Berlin, pp. 1047-1053, ills.

— Jahresbericht 1930 der Abteilung für Luftbildwesen und Navigation der Deutschen Versuchsanstalt für Luftfahrt. Berlin-Adlershof.

Annuario 1930, D.V.L., R. Oldenbourg, München und Berlin.

— Die neue Startmesskammer System DVL-Zeiss.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 583-587, ills., diagrs.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 13. Heft (14. Juli 1931), München und Berlin, pp. 401-405, ills., diagrs.

— Verfahren zur raschen Berechnung der Deviationsbeiwerte aus in überschüssiger Anzahl gemachten Beobachtungen.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 12. Heft (29. Juni 1931), München und Berlin, pp. 375-377, diagrs., tabl.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 588-590, diagrs.

LAFAY, A. Aérodynamique.—Sur les déviations, de la poussée du vent sur un cylindre, produites par de très petits ressauts superficiels.

C. R. Acad. Sci., T. 192, No. 20 (18 mai 1931), Paris, pp. 1199-1201.

LAFONT, A. Aceros para aviación y automovilismo.

Ibérica, Año 18, Núm. 882 (13 junio 1931), Barcelona, pp. 376-380, ills., diagrs.

LAGALLY, M. The frictionless flow in the region around two circles.

National Advisory Committee for Aeronautics, Technical Memorandums No. 626, June 25, 1931, Washington, June 1931, pp. 11, diagrs.

LAINÉ, ANDRÉ, ET G. GUET. Comment devenir aviateur; formalités à remplir—examens à passer—écoles à choisir—les principes de pilotage.
Paris, F.-L. Vivien, 1931, pp. vi, 98, illus.

LAINÉ, ANDRÉ. Manuel pratique de pilotage.
Paris, Civien, 1931.

LAIRD, E. M. (MATTIE). The Laird super-solution speedwing.
Aero Digest, Vol. 19, No. 4 (Oct. 1931), New York, pp. 76, 84, illus.

LAKE, E. F. Aircraft engine crankshafts.
Heat Treating and Forging, Vol. 17, No. 4 (April 1931), Pittsburgh, Pa., pp. 352-356, illus.

— Heat treatment of aircraft engine crankcases.
Aviation Engineering, Vol. 5, No. 5 (Dec. 1931), Washington, N.J., pp. 20-23, illus.

LAKE, HARLEY W. Merchandising airport service.
U.S. Air Services, Vol. 16, No. 3 (March, 1931), Washington, pp. 35-36.

LALLIER, ROGER. La Coupe Schneider est définitivement gagnée par l'Angleterre.
L'Aéophile, 39e année, No. 10 (15 oct. 1931), Paris, p. 291, ill.

LAMARCHE, PAUL E. Endurance monoplanes of France.
Aero Digest, Vol. 18, No. 6 (June 1931), New York, pp. 74-75, 124, illus.

— Observation and bombing airplanes of Great Britain.
Aero Digest, Vol. 18, No. 2, 3 (Feb., March 1931), New York, pp. 60-63, 82-87, illus.

— The Paris Salon de l'Aviation.
Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 98-99, 120, illus.

LÀMARI, VITTORIO. Sul male degli aviatori; ricerche sperimentali sul ricambio della creatina e creatinina del sangue in rapporto alle basse pressioni barometriche e al senso di fatica degli aviatori.
Polistena, Stabilimento tipografico degli orfanelli, 1931, pp. 17.

LAMB, H. Lehrbuch der Hydrodynamik. Von H. Lamb, autorisierte deutsche Ausgabe, 2. Aufl. (nach der 5. englischen Aufl.), besorgt von Frau E. Helly, mit Geleitwort und Zusätzen von R. von Mises.
Leipzig, Verlag B. G. Teubner, pp. xvi, 872, illus.
Teubners Lehrb. der math. Wissenschaften, Bd. 26.

LAMBERT. *See* Sexton, Russell W.: Lambert-St. Louis municipal airport of 1931.

LAMBERT, ALBERT BOND. *See* Sexton, Russell W.: Lambert-St. Louis airport.

LAMINAR flow *See* Fage, A., and V. M. Falkner: Relation between heat transfer and surface friction for laminar flow.

LAMONT, ROBERT. Glancing back at 1930. Civil aviation progress.
Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Cal., pp. 38-39.

LAMONT, ROBERT P. National conference on uniform aeronautic regulatory laws.
Air Law Review, Vol. 2, No. 1 (Jan. 1931), New York, pp. 53-54.

LANDING. *See* Diamond, H., and F. W. Dunmore: Airplanes land blind—guided by radio.
— *See* Fog: Landning i dimma med radiotekniska hjälpmmedel.
— *See* Jaeschke, Rudolf: Ein Beitrag zur Lösung des Problems der Verkürzung von Start und Landung bei Flugzeugen.
— *See* Jones, E. T.: Measurement of incidence and speed of the S. 5 seaplane on alighting.

LANDING. *See* Jones, E. T.: Measurement of landing loads.

- *See* Miller, Paul A.: Airplane landings in gusty surface winds.
- *See* Mounier, P. J. J.: Mistbestrijding.
- *See* Neumark, Stefan: Hamowanie kół lądującego samolotu.
- *See* Pabst, Wilhelm: Landing impact of seaplanes.
- *See* Pabst, Wilhelm: Über den Landestoss von Seeflugzeugen.
- *See* Pouit, R.: Calcul de la vitesse d'atterrissage d'un avion à partir de ses caractéristiques aérodynamiques et de la vitesse verticale à l'atterrissage.
- *See* Pröll, A.: Notlandung von Landflugzeugen auf See.
- *See* Pröll, A.: Start und Landung fahrgestelloser Flugzeuge.
- *See* Rolinson, D.: Take-off and landing of aircraft.
- *See* Schmidt, Wilhelm: Development of a non-autorotative airplane capable of steep landing.
- *See* Taub, Josef: Load assumption for the landing impact of seaplanes.
- *See* Wagner, Herbert: Über die Landung von Seeflugzeugen.
- *See* Williams, Frank: Landings—Stall and high speed.

LANDING fields. *See* Airports.

- *See* United States Department of Commerce, Aeronautics Branch: Establishment and operation of Department of Commerce intermediate landing fields. July 1, 1931.

LANDING GEAR. *See* Brakes: Wheel brakes and undercarriages.

- *See* Hollyhock, W. S.: Shock absorbers for aircraft landing gear.
- *See* Janik, Franciszek: Obliczanie podwozia samolotu metodą sił jednostkowych.
- *See* Maiorca, Salvatore: Airplane landing gear.
- *See* Peck, William Cecil: Dynamic and flight tests on rubbervord and oleo-rubber-disk landing gears for an F6C-4 airplane.
- *See* Peck, William Cecil, and Albert P. Beard: Static, drop, and flight tests on Musselman type airwheels.

LANDIS, WILLIAM B. The airplane in business.

U.S. Air Services, Vol. 16, No. 2 (Feb. 1931), Washington, pp. 26-28, ills.

- 1931 on parade.
Western Flying. Vol. 9, No. 5 (May 1931), Los Angeles, Cal., pp. 24-26, ills.

LANGE, K. O. Ergebnisse von Messungen vertikaler Windgeschwindigkeiten in der Atmosphäre.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 17. Heft (14. Sept. 1931), München und Berlin, pp. 513-519, ills., diagrs.

- Measurements of vertical air currents in the atmosphere.

National Advisory Committee for Aeronautics, Technical Memorandums No. 648, Nov. 25, 1931, Washington, November 1931, pp. 9, ills., diagrs.

156 NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

LANGELUTTIG, ALBERT. Criminal violations of administrative regulations.
Journal of Air Law, Vol. 2, No. 2 (April 1931), Chicago, pp. 151-158.

LANGLEY, M. Air transport. Towards Australia. The Dutch make a good start.

Flight, No. 1150, Vol. 23, No. 2 (Jan. 9, 1931), London, pp. 36-39, ills., map.

— On solid rivets.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1170, Vol. 23, No. 22 (May 29, 1931), London, pp. 478d-478h (36-40), ills., diagrs., tabls.

— The Royal Dutch Indian airways.

Flight, No. 1151, Vol. 23, No. 3 (Jan. 16, 1931), London, pp. 53-55, ills., map.

LANGLEY FIELD. See Klemin, Alexander: Recent aircraft engineering research.

— See United States Congress. House. Committee on Military Affairs: Additional land for Langley Field, Va. Report to accompany H.R. 10370.

LANGSDORFF, WERNER VON. Das Segelflugzeug.

München, J. F. Lehmanns Verlag, pp. 230, ills. 2., umgearbeitete Auflage.

— Taschenbuch der Luftflotten. Jahrgang 1931.

München, J. F. Lehmanns Verlag, 1931, Drei Abteilungen; Handel und Verkehr, pp. 186, ills. Sport-Luftfahrt, pp. 258, ills. Militär-Luftfahrt, pp. 224, ills.

— See Jahrbuch für Luftfahrt: Ergebnisse aus forschung, technik und betrieb herausgegeben von Werner v. Langsdorff.

LANSDOWNE, BERAN. Radio—How to install it on aircraft.

Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Cal., pp. 40-41, ill.

LAPRESLE, A. The aerodynamic wind vane and the inherent stability of airplanes.

National Advisory Committee for Aeronautics, Technical Memorandums No. 607, Feb. 26, 1931, Washington, February 1931, pp. 16, ills., diagrs.

— Le laboratoire d'aérodynamique.

L'Aérophile, 39e année, No. 8 (15 août 1931), Paris, p. 225.

LARDONE, FRANCESCO. Airspace rights in Roman law.

Air Law Review, Vol. 2, No. 4 (Nov. 1931), New York, pp. 455-467.

LARNER, L., and J. ACKERET. Aeronautical education and research at the Swiss Institute of Technology in Zürich.

National Advisory Committee for Aeronautics, Technical Memorandums No. 616, April 16, 1931, Washington, April 1931, pp. 8, ills.

LARRARD, J. H. B. The refuelling of aircraft in flight.

Journ. Roy. Aer. Soc., Vol. 35, No. 252 (Dec. 1931), London, pp. 1137-1145, diagrs.

ŁASKI, JAROSLAW. Badanie świerka górskiego z Worochny. Part I.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie Kwartalne Nr. 5 (Nr. 23), Warszawa, 1931, pp. 55-69, ills., tabls.

See Stefan Kozanecki for Part II.

— Próby szycia płotna lotniczego.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 2, Warszawa, 1930, pp. 37-39, diagrs.

LASSER, DAVID. The conquest of space.

New York, Penguin Press, 1931, pp. 271, ills.

LATCHFORD, STEPHEN. Aviation relations between the United States and Canada prior to negotiation of the air navigation arrangement of 1929.

Journal of Air Law, Vol. 2, No. 3 (July 1931), Chicago, pp. 335-341.

LATCHFORD, STEPHEN. *Habana convention on commercial aviation.*
 Journal of Air Law, Vol. 2, No. 2 (April 1931), Chicago, pp. 207-209.

LATÉCOÈRE. *Latécoère 38-O flying boat (French).* A long-range sesquiplane
 for carrying mail.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 136, Feb. 27, 1931,
 Washington, February 1931, pp. 5, ills.

LATERAL control. *See* Irving, H. B., and A. S. Batson: Some early model
 experiments on devices for improving lateral control near the stall.

LATERAL stability. *See* Halliday, A. S., and C. H. Burge: Lateral stability
 calculations for the Bristol fighter aeroplane.

LATIN AMERICA. *See* National Foreign Trade Council: Our air mail service
 with Latin America.

— *See* Pan America.

LAUNCHING. *See* Take off.

— *See* Wackett, L. J.: Launching by catapult.

LAWRENCE, CHARLES L. *Air defense from the viewpoint of the aircraft industry.*
 U.S. Air Services, Vol. 16, No. 8 (Aug. 1931), Washington, pp. 23-26, ill.

— Air transport. *The air mail service—Its development and cost.*
 Western Flying, Vol. 10, No. 4 (Oct. 1931), Los Angeles, Cal., pp. 21-24, tabls.

— Air transport. *The economic value of the air mail system.*
 Western Flying, Vol. 10, No. 5 (Nov. 1931), Los Angeles, Cal., pp. 20-23.

— Air transport. *Its relation to national defense.*
 Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, Cal., pp. 22-25, ill., map.

— Air transport. *What it means to the manufacturer.*
 Western Flying, Vol. 10, No. 2 (Aug. 1931), Los Angeles, Cal., pp. 18-22, diagrs., tabls., port

— *Commentaires sur la situation aéronautique aux États-Unis.*
 L'Aéronautique, 13me année, No. 148 (sept. 1931), Paris, pp. 311-313, ills.

— Commercial aviation—*Its relation to national defense.*
 U.S. Air Services, Vol. 16, No. 10 (Oct. 1931), Washington, pp. 23-25.

— Linking aircraft programs to Navy treaty strength.
 U.S. Air Services, Vol. 16, No. 9 (Sept. 1931), Washington, pp. 31, 33-34.

— The opportunity of the states.
 Aviation, Vol. 30, No. 10 (Oct. 1931), New York, pp. 579-582, maps.

— Toward new programs.
 Airway Age, Vol. 13, No. 1 (July 4, 1931), New York, pp. 22-25, ills.

— Trans-ocean airship services and Government support.
 Aviation Engineering, Vol. 5, No. 5 (Dec. 1931), Washington, N.J., pp. 15-19.

— What is being done about it?
 Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, Cal., p. 17.

— Where the industry stands.
 Aviation, Vol. 30, No. 12 (Dec. 1931), New York, pp. 678-681, diagrs., tabls.

LAWRENCE, DAVID. *The trend of the times.* The present business readjustment
 is of world-wide character, as epochal as the economic changes which
 followed the Napoleonic wars.

Aero Digest, Vol. 18, No. 1, 2, 3, 4 (Jan. Feb. March April 1931), New York, pp. 40, 51, 46, 58.

LAWRENCE, JOHN. *Bernt Balchen, viking of the air.*
New York, Brewer, Warren & Putnam, 1931, pp. 165, ills.

Laws and regulations. Aviation law.
Aviation, Vol. 30, No. 3 (March 1931), New York, p. 157.

- Blessures causées par un avion roulant au sol.
L'Aérophile, 39e année, No. 5 (15 mai 1931), Paris, p. 153.
- Conference on uniform air laws.
Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 104-105, ills.
- Decisions on air law.
Aero Digest, Vol. 19, No. 3 (Sept. 1931), New York, p. 46.
- Enquiries into the economic, administrative and legal situation of International Air Navigation.
Boston, U.S. Agents, League of Nations, World Peace Foundation, pp. 207, diagrs., maps.
- De nieuwe luchtvartregeling.
Het Vliegveld, 15de Jaarg., No. 3 (Maart 1931), Amsterdam, pp. 87-93, ills.
- A plea for uniform laws.
Western Flying, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Cal., p. 43.
- Recours du passager à titre gratuit contre le pilote.
L'Aérophile, 39e année, No. 7 (15. juil. 1931), Paris, p. 215.
- Responsabilité civile de l'exploitant comparée à celle de l'automobiliste.
L'Aérophile, 39e année, No. 8 (15 août 1931), Paris, pp. 251-252.
- La responsabilité des organisateurs de meetings.
L'Aérophile, 39e année, No. 6 (15 juin 1931), Paris, p. 187.
- *See* Air lines: New rules for airlines.
- *See* Allen, William M.: Limitations of liability to passengers by air carriers.
- *See* Allied and associated powers: Protocol amending articles 34 and 40 of the Convention for the Regulation of Aerial Navigation of October 13, 1919. Paris, December 11, 1929. Irish ratification on April 9, 1930.
- *See* American Bar Association: Report of the standing committee on aeronautical law. Presented at the meeting held at Atlantic City, New Jersey, September 17, 18, 19, 1931.
- *See* Austria: Oesterreich. Gesetzgebung. Zusammenstellung der in Oesterreich geltenden Vorschriften für den Luftverkehr.
- *See* Belgium: Lufttüchtigkeit. Kgl. Erlass zur Regelung der Lufttüchtigkeit von Luftfahrzeugen vom 27. December 1930.
- *See* Belgium: Verordnung. Kgl. Entschliessung vom 11. Mai 1931 zur Änderung der Belgischen Luftfahrtverordnung vom 27. November 1919.
- *See* Bessière, P.-L.: A propos des accidents causes par les avions a la surface du sol.
- *See* Bessière, P.-L.: La naissance d'un droit nouveau.
- *See* Bessière, P.-L.: La responsabilité du transporteur.
- *See* Bolivia. Bolivien. Verordnung. Luftfahrtverordnung vom 24. Okt. 1930.

Laws and regulations. *See* Brown, Thad H.: State regulation of radio.

— *See* Bulgaria: Bulgarien. Sperrgebiete.

— *See* Canada: Exchange of notes (August 29, and October 22, 1929) regarding an agreement between Canada and the United States of America regarding the admission of civil aircraft, the issuance of pilots' licenses and the acceptance of certificates of airworthiness for aircraft imported as merchandise.

— *See* Cogliolo, Pietro: Codice aeronautico, con appendici di aggiornamento a tutto il 1930.

— *See* Colegrove, Kenneth: The international aviation policy of the United States.

— *See* Colegrove, Kenneth W.: International control of aviation.

— *See* Commercial aeronautics: Le statut de l'aviation marchande.

— *See* Congrès international de législation aérienne: Neuvième Congrès international de législation aérienne du Comité Juridique international de l'Aviation, tenu à Budapest du 29 septembre au 3 octobre 1930. (9th Budapest, 1930).

— *See* Connecticut: Connecticut laws governing aeronautics. Revised to July 1, 1931. Office of Commissioner of Aeronautics, Hartford.

— *See* Cooper, John Cobb: Rules of aircraft liability in the proposed federal Merchant Airship Act.

— *See* Denmark: Instruks for bevægelige radiostationer om bord i skibe eller luftfartøjer. April 1930.

— *See* Denmark: Kopenhagen—Mellemför, Luftfahrtfeuer. Kopenhagen, Schiessübungen. Kjöge-Bucht, Schiessübungen. Fredericia, Schiessübungen. Ordup By, Funkmaste.

— *See* Donovan, William J.: Origin and development of radio law.

— *See* English, Joseph F.: Air freedom: The second battle of the books.

— *See* Enriques, G.: Lo spazio atmosferico nel diritto internazionale.

— *See* Fagg, Fred D.: The state aeronautical regulation of 1930.

— *See* Fixel, Rowland W.: The seadrome and international law.

— *See* Fixel, Rowland W.: Use of aircraft during martial law.

— *See* France. Frankreich. Verordnung über Sperrgebiete sowie Benutzung und Beförderung von Lichtbildgerät in den französischen Kolonien.

— *See* Freeman, William Marshall: Air and aviation law (civil aviation) being an exposition of the statute and case law affecting air navigation.

— *See* Garcia, Gonzalo: Problemas jurídicos que la aviación plantea.

— *See* Germany: Deutschland. Darmstadt, Flughafen. Nürnberg-Fürth, Flughafen. München-Oberwiesenfeld, Flughafen. Wilhelmshaven, Wasserflughafen. Warnemünde, Schiessübungen. Spreenhagen, Schiessübungen. Meppen, Schiessübungen. Kolberg, Schiessübungen. Tenkitten (Ostpr.), Schiessübungen. Nürnberg, Schiessübungen. Ungültigkeit einer Genehmigung. Ungültigkeit von Genehmigungen. Klasseneinteilung von Flugzeugen.

Laws and regulations. *See* Germany. Gesetz zu dem Abkommen zwischen dem Deutschen Reich und Grossbritannien über Änderung des Luftverkehrsabkommen vom 29. Juni 1927. Vom 31. März 1931.

- *See* Giannini, Amedeo: *La nazionalità degli aeromobili*.
- *See* Giannini, Amedeo: *Saggi di diritto aeronautico*.
- *See* Gottscho, Ernst: *Luftverkehrsrecht; luftverkehrsgesetz und luftverkehrsverordnung nebst ergänzendem anhang; mit einleitung, erläuterungen, tabellen und sachverzeichnis*.
- *See* Great Britain: Agreement between His Majesty in respect of the United Kingdom and the President of the German Reich amending the agreement of June 29, 1927 relating to air navigation. Berlin, July 5, 1930. Ratifications exchanged at Berlin, May 6, 1931.
- *See* Great Britain: Exchange of notes between His Majesty's governments in the United Kingdom, Canada, the Commonwealth of Australia, New Zealand, and the Union of South Africa and the Government of India, and the Italian government respecting documents of identity for aircraft personnel. London, April 13, 1931.
- *See* Great Britain: Grossbritannien. Ausführungsbestimmungen. Vom 20. Dezember 1930 zur britischen Luftfahrtverordnung vom 19. Dezember 1923.
- *See* Great Britain: Nachtflugübungen. London, Flughafen. Zollflughäfen. Verordnung.
- *See* Great Britain: Signale zwischen Luftfahrzeugen und Schiffen. Kairo-Kapstadt, Luftverkehr. Jersey, Verordnung.
- *See* Great Britain: Verordnung. Britische Luftfahrtverordnung vom 19. Dezember 1923 unter Berücksichtigung der bis einschließlich 1930 vorgenommenen Abänderungen.
- *See* Greece: Sperrgebiete. Verordnung vom 24. November 1930 betreffend Festsetzung der für die Luftfahrt verbotenen Zonen.
- *See* Greece: Verordnung vom 24. November 1930 betreffend Benachrichtigung wegen Überfliegens oder Landung auf griechischem Staatsgebiet durch Privatflugzeuge.
- *See* Greece: Vorschriften betreffend den Besuch ausländischer Luftfahrzeuge in Griechenland.
- *See* Hahn, Kurt: *Die deutschen luftverkehrsabkommen*.
- *See* Harriman, Edward A.: *Federal and state jurisdiction with reference to aircraft*.
- *See* Honduras: *Ley de aviación*.
- *See* Idaho: *Idaho aeronautics law, air navigation facilities, air marking, licensing and regulation, miscellaneous information*.
- *See* Illinois: *Air traffic rules of the State of Illinois prescribed by the Illinois Aeronautics Commission and effective November 23, 1931*.
- *See* International Commission for Air Navigation: *What the I.C.A.N. is*.

LAWS and regulations. *See* Ireland: Verordnung. Irische Luftfahrtverordnung vom. 6 März 1930.

— *See* Italy: Testo unico delle leggi e regolamento sulla requisizione dei quadrupedi e veicoli per il r. esercito, per la r. marina e per la r. aeronautica.

— *See* Japan: Verkehrsvorschriften.

— *See* Jugoslavia; Jugoslawien. Belgrad, Verordnung.

— *See* Knauth, Arnold W., Allen J. Furlow, Henry J. Fulow, Henry G. Hotchkiss and Emory H. Niles: 1930 United States aviation reports.

— *See* Kremlick, Kurt J.: A survey of aviation insurance law.

— *See* Lamont, Robert P: National conference on uniform aeronautic regulatory laws.

— *See* Langeluttig, Albert: Criminal violations of administrative regulations.

— *See* Lee, Blewett: Freedom of the air in the United States.

— *See* Lettland: Zollaufsicht. Verordnung vom 30. April 1931 über die Zollaufsicht im Luftverkehr.

— *See* Lin, Wo-chiang: The development of aviation and aeronautical law in China.

— *See* Logan, George B.: The present status and the development of aviation law.

— *See* MacKenzie, Robert J.: The regulation of aerial common carriers.

— *See* Malay States: Malayan-Staaten. Verordnung.

— *See* Mexico: Mexiko. Gesetz. Mexicanisches Luftverkehrsgesetz vom 31. December 1929.

— *See* Meyer, Alex: Das Neutralitätsrecht im Luftkriege.

— *See* Michigan: Laws relating to aeronautics.

— *See* National Conference on Uniform Aeronautic Regulatory Laws: Proceedings of the National Conference on Uniform Aeronautic Regulatory Laws, December 16 and 17, 1930, Washington, D.C.

— *See* New York State: Laws affecting aviation of the State of New York. Published by the New York State Commission on Aviation.

— *See* Oregon: Oregon aeronautic laws regulating flying and registering aviators.

— *See* Osterhout, Howard: The doctrine of *res ipsa loquitur* as applied to aviation.

— *See* Palastine: Palätina. Verordnung.

— *See* Portugal: Verordnung.

— *See* Prochasson, Roger: Le risque de l'air.

— *See* Quindry, Frank E.: Aerial bombardment of civilian and military objectives.

Laws and regulations. *See* Rentschler, Frederick B.: Importance of uniform aeronautic regulatory laws to the aircraft industry.

— *See* Rhodesia: Nord-Rhodesien. Sperrgebiete.

— *See* Rhodesia: Süd-Rhodesien. Gestez.

— *See* Rohlfing, Charles Carroll: National regulation of aeronautics.

— *See* Roper, Albert: La Convention internationale du 13 octobre 1919 portant réglementation de la navigation aérienne.

— *See* Segal, Paul M.: The regulation of amateur radio communication.

— *See* South Africa: Verordnung. Luftfahrtverordnung vom. 9 August 1939.

— *See* Spain: Verordnung betreffend den Betrieb der Hilsflughäfen Kap Juby und Villa Cisneros.

— *See* Switzerland: Flughafengebühren. Reglement des Eigenössischen Luftamtes vom 3. Dezember 1930 über die Flugplatztaxen, gültig ab 1. Januar 1931 für die schweiz. Zollflugplätze.

— *See* Switzerland: Schweiz. Motorloser Flug. Reglement betreffend die Organisation der Aufsicht über das motorlose Flugwesen vom 14. Dezember 1930.

— *See* Tauber, Ernst: Haftung des Luftfahrzeughalters und Reichs versicherungsordnung.

— *See* Turkey: Ueberflug.

— *See* Turner, Ellwood J.: Résumé of experience of Pennsylvania in state regulation.

— *See* Tuttle, Alonzo Hubert, and Dale Elmer Bennett: Extent of power of Congress over aviation.

— *See* United States Congress. House. Committee on Foreign Affairs: International Technical Committee of Aerial Legal Experts. Report to accompany H.J. Resolution 299.

— *See* United States Department of Commerce. Aeronautics Branch: Air commerce regulations. Effective December 31, 1926. Effective as amended September 1, 1929.

— *See* United States Department of Commerce. Aeronautics Branch: Air commerce regulations. Effective as amended January 1, 1931.

— *See* United States Department of Commerce. Aeronautics Branch: Air commerce regulations governing alterations and repairs to licensed aircraft. Effective January 1, 1931.

— *See* United States Department of Commerce. Aeronautics Branch: Air traffic rules. Extract from air commerce regulations December 1, 1929.

— *See* United States Department of Commerce. Aeronautics branch: Airworthiness requirements of air commerce regulations for aircraft. Effective January 1, 1931.

— *See* United States Department of Commerce. Aeronautics Branch: Airworthiness requirements of air commerce regulations for aircraft. Effective as amended January 1, 1932.

LAWs and regulations. *See* United States Department of Commerce. Aeronautics Branch: Department of Commerce regulations governing entry and clearance of aircraft effective as amended April 7, 1931, and United States airport of entry regulations effective November 1, 1931.

- *See* United States Department of Commerce. Aeronautics Branch: Regulations governing establishment and certification of aeronautical lights and instructions for marking obstructions to air navigation. August 1, 1930.
- *See* United States Department of Commerce. Aeronautics Branch: School supplement of Air Commerce Regulations. Effective as amended January 1, 1931.
- *See* United States Department of Commerce. Aeronautics Branch. State aeronautical legislation and compilation of State laws. Revised to September 1, 1929.
- *See* United States Department of State: Regulations to govern air navigation in the Canal Zone. Promulgated by the Secretary of State. September 22, 1931.
- *See* Veeder, Van Vechten: The legal relation between aviation and admiralty.
- *See* WENNEMAN, Joseph H: Municipal airports; history, development and legal aspect of municipal airports, text of federal acts and regulations, digests of State aviation laws and of the State enabling acts, ordinances of principal cities having airports on main airways, legal and business forms in use in the aviation industry.
- *See* Wingfield, Lawrence Arthur, and Reginald Brabant Sparks: The law in relation to aircraft.
- *See* WÜSTENDÖRFER, Hans: Wege und ziele des kommenden weltluftrechts, namentlich im hinblick auf den überseeischen luftverkehr.

LAWSON, I. N., Jr., The business of running a flying school. Article I: Field operations, flight schedules, student appointments. Article II: Equipment, maintenance, shop practice.

Aero Digest, Vol. 18, No. 3, 4 (March April 1931), New York, pp. 48-49, 126-128, 182-184, ills.

LAZAZZERA, ROCCO. Finn Malmgren l'eroe polare.
Roma-Foligno, F. Campitelli, 1931, pp. 368, ills.

LEBLANC. Le prix Alfred Leblanc.
L'Aérophile, 39e année, No. 8 (15 août 1931), Paris, p. 235.

LE BROcq, L. F. *See* Sutton, H., and L. F. Le Brocq: The protection of magnesium alloys against corrosion.

LECHÈNE, A. Les nouveaux brevets de pilote français et allemands.
L'Aérophile, 39e année, No. 3 (15 mars 1931), Paris, pp. 67-69, ills.

LEDERER, JEROME. What it costs to operate a business plane.
Western Flying, Vol. 9, No. 5 (May 1931), Los Angeles, Calif., 28-31, ill., tabls.

LEE, BLEWETT. Freedom of the air in the United States.
American Journal of International Law, Vol. 25, 1931, Concord, N.H., pp. 238-251.

LEE, JOHN G. On the lift and drag of wings.
Airway Age, Vol. 12, No. 2 (Feb. 1931), New York, pp. 138-141, diagrs, tabls.

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LEGISLATION. *See* MacCracken, William P., Jr.: National conference on uniform aeronautic regulatory laws. Special problems in aeronautic legislation.

LÉGLISE, PIERRE. The Bernard 120 seaplane (French). A 1400 hp single-seat monoplane racer.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 139, March 17, 1931, Washington, March 1931, pp. 5, ills.

— Clerget 100 hp heavy-oil engine.

National Advisory Committee for Aeronautics, Technical Memorandums No. 603, Jan. 29, 1931, Washington, January 1931, pp. 10, ills.

— A French Diesel engine. The 100 h.p. compression ignition engine designed by M. Clerget for the Service Technique.

Aircraft Engineering, Vol. 3, No. 25 (March 1931), London, pp. 53-54, ills.

— Les moteurs français du dernier Salon.

L'Aéronautique, 13me année, No. 140, Bulletin L'Aérotechnique, 9e année, No. 98 (Jan. 1931), Paris, pp. 49-58, ills.

— The new "Charlestop" remote brake transmission and control.

National Advisory Committee for Aeronautics, Technical Memorandums No. 640, Oct. 1, 1931, Washington, October 1931, pp. 3, ills.

— Superchargers.

National Advisory Committee for Aeronautics, Technical Memorandums No. 631, July 31, 1931, Washington, July 1931, pp. 26, ills., diagrs., tabls.

LEHMANN, G. D. *See* Jenkin, C. F., and G. D. Lehmann: High frequency fatigue.

LEHR, ERNST. Schwingungstechnik. 1. Band. Grundlagen. Die Eigen-schwingungen eingliedriger Systeme.

Berlin, Verlag Julius Springer, 1930, pp. 295, ills.

LEIPZIG. *See* Bongenhielm, Folke: Flygplatsen halle—Leipzig.

LEMKE, HANS. Ratgeber für deutsche Sportflieger bei Auslandsflügen; eine zusammenstellung der luftverkehrsvorschriften der europäischen länder unter besonderer berücksichtigung der flugbestimmungen, einflugzonen und sperr-gebiete.

Berlin, Verlag und Druck Gebr. Radetzki, 1931, pp. 168.

LEMOING, C. Le premier vol sans moteur vers 1806 à Angoulême.
Angoulême, Impr. de "La Charente", 1931, pp. 33, ills.

LEONARDO DA VINCI. *See* Verga, Ettore: Bibliografia vinciana, 1493-1930.

LERAY, J. Hydrodynamique.—Mouvement lent d'un fluide visqueux à deux dimensions limité par des parois fixés.

C. R. Acad. Sci., T. 193, No. 23 (7 dec. 1931), Paris, pp. 1165-1166.

LETTLAND. Zollaufsicht. Verordnung vom 30. April 1931 über die Zollaufsicht im Luftverkehr.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 44 (31.Okt.1931), Berlin, pp. 322-324.

LEVA, FAUSTO M. Le applicazioni del giroscopio sul mare e nell'aria.
Riv. Aer., Anno 7, N. 9 (sett. 1931), Roma, pp. 393-402, ills.

LEWIS, H. C. Aircraft finishing of today.

National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, pp. 13-14, 66, ills.

LEY, WILLY. Die fahrt ins weltall.

Leipzig, Hachmeister & Thal, 1929, pp. 83, ills., diagrs.

LIBERTY ENGINE. *See* Dayton Engineering Laboratories Co.: Service manual, covering the Delco system installed on the Liberty aviation engine.

LIBRARY OF CONGRESS. *See* Zahm, Albert Francis: *Origin and progress of the Division of Aeronautics.*

LICENSING. *Federal licensing of airman.*

Aero Digest, Vol. 18, No. 5 (May 1931), New York, pp. 35-45, 122, ills.

LIÉGE. *See* Guider, John W.: *The juridical congress on wireless telegraphy at Liége.*

— *See* Guilder, John W.: *The Liege congress of the international committee on wireless telegraphy.*

LIENESCH, C. F. *The handicap derby.*

Western Flying, Vol. 10, No. 4 (Oct. 1931), Los Angeles, Cal., pp. 15-16.

LIFT. *See* Alston, R. P.: *Maximum lift coefficient of "Starling" with Clark YH wings.*

— *See* Bradfield, F. B., K. W. Clark, and R. A. Fairthorne: *Maximum lift in closed and open jet tunnels.*

— *See* Crouch, A.S.: *Measurement of lift and drag of Southampton seaplane.*

— *See* Fowler, Harlan D.: *Variable lift.*

— *See* Hartshorn, A. S.: *The influence of a fuselage on the lift of a monoplane.*

— *See* Lee, John G.: *On the lift and drag of wings.*

— *See* Lusk, Hilton F.: *A philosophy of lift.*

— *See* Munk, Max Michael: *The creation of lift by a wing section.*

— *See* Munk, Max Michael: *The distribution of lift.*

— *See* Munk, Max Michael: *Means for increasing the lift.*

— *See* Ormerod, A.: *Full scale measurements of lift coefficients of a Bristol fighter with R.A.F. 34 wings and slots.*

— *See* Theodorsen, Theodore: *On the theory of wing sections with particular reference to the lift distribution.*

— *See* Thompson, Floyd La Verne, and P. H. Keister: *Lift and drag characteristics of a cabin monoplane determined in flight.*

— *See* Töpfer, Carl: *Lift distribution and longitudinal stability.*

LIGHT aeroplanes. *See* Bradbrooke, F. D.; *The light aeroplane manual.*

LIGHTING. *Aga flygfyrar.*

Flygning, Årg. 9, N:o 4 o. 5 (April-Maj 1931), Stockholm, pp. 90-92, ills.

— *Ground lighting equipment. The fundamental considerations and detailed design of lights for airway and aerodrome use.*

Aircraft Engineering, Vol. 3, No. 32 (Oct. 1931), London, pp. 255-260, ills., diagrs.

— *See* Cost, R. W.: *Hangar lighting and safety.*

— *See* Germany: *Berlin-Hannover-Westgrenze, Luftfahrtfeuer.*

— *See* Kjellson, Henry: *Belysning av flyglinjer och flyghamnar.*

— *See* Mackall, K. W.: *U.S. aerodrome lighting. Details and characteristics of the various types of aerodrome lights in current use.*

LIGHTING. *See* Ritchie, H. C.: New airport lighting development.

— *See* United States Department of Commerce. Aeronautics Branch: Notes on airport lighting. April 15, 1929.

— *See* Young, D. C.: The airplane's lighting problems.

LIGHTNING. *See* Austin, A. O.: Lightning investigation as applied to the airplane.

LILIENTHAL, OTTO. *See* Schäffer, Ernest: Glück ab; bahnbrecher der lüfte.

LIMHAMN. Ab. flygindustri, Limhamn.

Flygning, Årg. 9, N:R 4 o. 5 (April-Maj 1931), Stockholm, pp. 80-81, illus.

LIMITS. *See* Rodger, R.: Limits, fits, and allowances.

LIN, WO-CHIANG. The development of aviation and areonautical law in China. Journal of Air Law, Vol. 2, No. 2 (April 1931), Chicago, pp. 159-175.

LINDBERGH, CHARLES AUGUSTUS. *See* Haines, Lynn: The Lindberghs.

— *See* Lockheed: Lindbergh's Lockheed seaplane.

— *See* Schäffer, Ernst: Glück ab; bahnbrecher der lüfte.

LINDBERGH, H. A. Minneapolis municipal airport.

Aero Digest, Vol. 18, No. 5 (May 1931), New York, pp. 90-92, ill.

LINDNER, C. J. Blindflygning och dess instrument.

Flygning, Årg. 9, N:R 1 (Jan. 1931), Stockholm, pp. 8-9, illus.

LIOY, VINCENZO. Cooperazione aero-terrestre.

Riv. Aer., Anno 7, n. 2 (feb. 1931), Roma, pp. 240-256.

LIPPISCH, ALEXANDER. The development, design and construction of gliders and sailplanes.

Journ. Roy. Aer. Soc., Vol. 35, No. 247 (July 1931), London, pp. 532-578, illus.

— The development, design, and construction of gliders and sailplanes.

National Advisory Committee for Aeronautics, Technical Memorandums No. 637, Sept. 12, 1931, Washington, September 1931, pp. 38, illus.

— *See* Stamer, Fritz, und A. Lippisch: Gleitflug und Gleitflugzeuge. Teil II. Bauanweisungen und Bauzeichnungen.

LIPPMAN, H. E. Design of municipal airports. Part one—Preliminary organization and selection of a site. Part two—Planning the airport and airport buildings. Part three—The Placing and construction of buildings are important.

Airway Age, Vol. 12, Nos. 4, 5, 10 (Apr., May, Jun., 1931), New York, pp. 359-361, 473-475, 586-587, illus.

LIPSCOMB, C. P. "Crusader" aircraft. Single-seater high-speed float seaplane. Constructional report.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 320-324, illus.

LIPTROT, R. N. Modern development in the helicopter.

Journ. Roy. Aer. Soc., Vol. 35, No. 247 (July 1931), London, pp. 624-632.

LITTEN, FREDERIC NELSON. Brooks of the Valley Airways . . . Illustrated by Svén Elven.

New York, London, D. Appleton and Company, 1931, pp. 280, illus.

LITTLE, DELBERT M. Some effects of California mountain barriers on upper air winds and sea-level isobars.

Monthly Weather Review, Vol. 59, No. 10 (Oct. 1931), Washington, pp. 376-380, maps, diagrs.

LITTLE ROCK, ARK. *See* United States Congress. House. Committee on Military Affairs; Lease portions of Air Depot, Little Rock, Ark. . . . Report to accompany H.R. 15493.

LLAVE, JOAQUÍN DE LA. La lucha entre el dirigible y el avión.

Ibérica, Año 18, Núm. 874 (18 abril 1931), Barcelona, pp. 246-247, ill.

— Travesía del océano por una escuadra de hidros italianos.

Ibérica, Año 18, Núm. 869 (14 marzo 1931), Barcelona, pp. 161, 165-166, ill.

— *See* Autogiro: El viaje más largo hecho en autogiro.

— *See* R. 101: El informe pericial sobre el accidente del "R. 101."

LOAD. Load factors.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, p. 58.

— More miles, more loads. A review of the progress of air transportation in 1930.

Western Flying, Vol. 9, No. 3 (March 1931), Los Angeles, Cal., pp. 36-37, diagrs.

— *See* Helmbold, H. B.: Über Flugleistungsstatistik.

— *See* Jones, E. T.: Measurement of landing loads.

— *See* Miller, Roy A.: A solution of the circular ring.

— *See* Rhode, Richard V., and Eugene E. Lundquist: Preliminary study of applied load factors in bumpy air.

— *See* Sänger, Eugen: Zur genauen Berechnung vielholmigparallelsteigiger, ganz- und halbfreitragender, mittelbar und unmittelbar belasteter Flügelgerippe.

— *See* Schmeidler, Werner: Eine Formel für das Rollmoment bei Tragflügeln.

— *See* Taub, Josef: Load assumption for the landing impact of seaplanes.

— *See* Thalau, Karl: Zur Frage der Belastungsannahmen für Flugzeuge.

LOADS AND STRESSES. *See* Evans, F. G.: The method "least work" and the stressing of aeroplane structures.

LOCK, C. N. H., and H. BATEMAN. Airscrews at negative torque.

Aer. Res. Comm., Rep. Mem., No. 1397 (Ae. 518-T. 3057), January 1931, London, 1931, pp. 5, diagrs., tabs.

LOCK, C. N. H. The application of the theoretical velocity field around a spheroid to calculate the performance of an airscrew near the nose of a streamline body.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 415-418, diagrs. Rep. Mem. No. 1239. (Ae. 394.)

— The effect of body interference on the efficiency of an airscrew.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 407-414, diagrs. Rep. Mem. No. 393 (Ae. 395.)

— The equations of motion of a viscous fluid in tensor notation.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 135-162, diagr. Rep. Mem. No. 1290 (Ae. 439).

LOCK, C. N. H. The interference of a wind tunnel on a symmetrical body.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 615-634, diagrs., tabls. Rep. Mem. No. 1275. (Re. 421.)

LOCK, C. N. H., and A. R. COLLAR. Exploration of the flow near the screw proposed for the N. P. L. compressed air tunnel.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 384-393, ill., diagrs., tabls. Rep. Mem. No. 1923 (Ae. 442.)

LOCK, C. N. H., and F. C. JOHANSEN. Pressure plotting a streamline body with tractor airscrew running. Part II.—Airscrew in the rear position.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 419-435, ills., diagrs., tabls. Rep. Mem. No. 1284. (Ae. 434.)

LOCKHEED. The installation of floats on Colonel Lindbergh's special Lockheed Sirius.

National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, pp. 9-10, ills.

— Lindbergh's Lockheed seaplane.

Aero Digest, Vol. 19, No. 1 (July 1931), New York, pp. 60-64, ills.

— The Lockheed "Vega".

Flight, No. 1162, Vol. 23, No. 14 (April 3, 1931), London, pp. 288-289, ills.

LOCKSPEISER, B. Ventilation of 24-ft. wind tunnel.

Aer. Res. Comm., Rep. Mem., No. 1372 (Ae. 499-T.3096), February 1931, London, 1931, pp. 10, ills., diagrs.

— See Clark, K. W., and B. Lockspeiser: Wind tunnel tests on aerofoils at negative incidences.

LÖSSL, E. v. Der Einfluss des Holmgewichtes auf die Bauspannweite und die Flugleistungen von Grossflugzeugen.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 6. Heft (28. März 1931), München und Berlin, pp. 157-161, diagrs.

LÖWENTHAL. See Scharnow, C.: Luftschiffhalle Löwental.

LOGAN, GEORGE B. The present status and the development of aviation law. Journal of Air Law, Vol. 2, No. 4 (Oct. 1931), Chicago, pp. 510-523.

LOGAN, HUB. Hospitality—Pueblo style.

Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, pp. 30-32, ills.

LOHR, A. Cloud flights.

Monthly Weather Review, Vol. 59, No. 11 (Nov. 1931), Washington, pp. 430-431.

LONDON. See McAdie, Alexander, and E. Gold: Meteorological conditions during the air raid on London, Oct. 19-20, 1917.

LONG, M. A. Airports for seaboard cities.

Aero Digest, Vol. 19, No. 2 (Aug. 1931), New York, p. 74, ill.

LONG ISLAND. See Birnn, Roland: An aerial jaunt around Long Island.

LONGITUDINAL CONTROL. See Jones, E. T., and R. P. Alston: Longitudinal control and stability when stalled.

LORRAINE-DIETRICH. See Peter, Franciszek, Stanisław Olszewski, Józef Ziwoński, i Hubert Krasinski: Badania nad zastosowaniem mieszanki alkoholowej do silnika Lorraine-Dietrich 450 KM.

LOS ANGELES. See Davidson, Walter V.: Winter flying from Denver to Los Angeles.

— See Dayhoff, Clancey: Los Angeles county airport plan.

Lost planes. *See* Steele, Dudley: Searching from the air.

LOTH, WILLIAM. *See* Ide, John Jay: The Loth system of navigation by rotating radio beacons.

LOTZ, IRMGARD. Berechnung der Auftriebsverteilung beliebig geformter Flügel. *Zeitschr. Flugt. Motorluftsch.*, 22. Jahrg., 7. Heft (14. April 1931), München und Berlin, pp. 189-195, diagrs.

LOVE, FRANCIS H. Precedents to guide the aeronautical exporter. *Aero Digest*, Vol. 18, No. 4 (April 1931), New York, pp. 36, 238-240, ill.

LOWELL, JAMES R. For business and pleasure, Martin uses a plane. *Western Flying*, Vol. 10, No. 1 (July 1931), Los Angeles, Cal., pp. 30-31, ill.

LOWER, J. H. Some notes on flying boats and seaplanes. *Journ. Roy. Aer. Soc.*, Vol. 35, No. 246 (June 1931), London, pp. 515-528, ills., diagrs.

LUBRICANTS. *See* Costanzi, Giulio: Il problema del lubrificante nazionale per i motori a scoppio e la coltivazione del ricino in Italia.

LUBRICATING oil. *See* King, R. O., and H. Moss: Detonation and lubricating oil.

LUBRICATION. *See* Andriani, Oronzo: Lubrificazione appropriata dei motori d'aviazione a caratteristiche dei lubrificanti.

— *See* King, R. O., and H. Moss: Detonation, mineral lubricating oils and blended fuels.

— *See* Mielnikowa, Boleslawa: Charakterystyka smarów lotniczych.

— *See* Oils: Aviation engine oil.

— *See* Wagner, Lawrence T.: Lubrication.

LUFTFAHRT. Luftfahrt. Politische einflüsse. Luftfahrzeugbau. Luftschiffahrt. Motorenbau. Luftverkehr. Segelflug. *Zeitschr. Ver. deutscher Ing.*, Bd. 75, Nr. 1 (3. Jan. 1931), Berlin, pp. 28-29, ills.

LUNARDI, VINCENZO. *See* Morazzoni, Giuseppe: Un pioniere dell'aeronautica, Vincenzo Lunardi; documenti inediti e saggio iconografico, raccolti da G. Morazzoni.

LUNDBORG, EINAR. *See* Vitt, Leonard: Einar Lundborg.

LUNDQUIST, EUGENE E. *See* Rhode, Richard V., and Eugene E. Lundquist: Applied load factors in bumpy air. A preliminary study in the light of the meteorological data at present available.

— *See* Rhode, Richard V., and Eugene E. Lundquist: Preliminary study of applied load factors in bumpy air.

— *See* Rhode, Richard V., and Eugene E. Lundquist: The pressure distribution over a modified elliptical wing tip on a biplane in flight.

— *See* Rhode, Richard V., and Eugene E. Lundquist: The pressure distribution over a semicircular wing tip on a biplane in flight.

— *See* Rhode, Richard V., and Eugene E. Lundquist: The pressure distribution over a square wing tip on a biplane in flight.

— *See* Rhode, Richard V., and Eugene E. Lundquist: Pressure distribution over the fuselage of a PW-9 pursuit airplane in flight.

LUNDQUIST, EUGENE E. *See* Rhode, Richard V., and Eugene E. Lundquist: Strength tests on paper cylinders in compression, bending, and shear.

LUSK, HILTON F. A philosophy of lift.

U. S. Air Services, Vol. 16, No. 3 (March, 1931), Washington, pp. 15-18, ills.

LYNAM, E. Notes on the flutter of airscrew blades.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 436-440, diagrs. Rep. Mem. No. 1258. (Ae. 407.)

LYNX. *See* Raffaelli, Italo: Apparecchio Ba/33 con [motore] Lynz suralimentato.

LYON, DARWIN O. Il razzo nella meteorologia e nella scienza.

L'Aerotecnica, Vol. 11, n. 11 (nov. 1931), Roma, pp. 1421-1431, diagrs. Abstract in English pp. 1490-1491.

LYON, EDWIN B. On duty with the Air Corps in Panama.

National Aeronautic Magazine, Vol. 9, No. 1 (Jan. 1931), Washington, pp. 9-12, ills.

M

MAAS, H. J. VAN DER. Bezoek aan Rossitten en wasserkuppe.

Het Vliegveld, 15de Jaarg., No. 12 (Dec. 1931), Amsterdam, pp. 427-429, ills.

MCADIE, ALEXANDER. Airgraphics.

Cambridge, Mass., Harvard University Press; London, Oxford University Press, 1931, pp. 377, ills.

Cambridge, Mass., Published by the Observatory, 1931, p. 37, diagrs., tabs.

MCADIE, ALEXANDER, and E. GOLD. Meteorological conditions during the air raid on London, Oct. 19-20, 1917.

Nature, Vol. 127, No. 2197 (Feb. 7, 1931), London, p. 198.

MCALERY, C. M. The air exercises.

Aeroplane, Vol. 41, No. 5 (July 29, 1931), London, pp. 301-314, ills., map

— The annual dinner of the air league.

Aeroplane, Vol. 40, No. 17 (April 29, 1931), London, pp. 758, 760.

— At Calshot.

Aeroplane, Vol. 41, No. 12 (Sept. 16, 1931), London, pp. 704-718, ills.

— The British team.

Aeroplane, Vol. 41, No. 11 (Sept. 9, 1931), London, pp. 636-646a, ports.

— Compulsory piloting.

Aeroplane, Vol. 41, No. 9 (Aug. 26, 1931), London, p. 514.

— The debate on airship policy.

Aeroplane, Vol. 40, No. 20 (May 20, 1931), London, pp. 928, 930, 932.

— The debate on the air estimates.

Aeroplane, Vol. 40, No. 12 (March 25, 1931), London, pp. 501-502, 504, 506, 508, 510.

— The Royal Air Force in 1930.

Aeroplane, Vol. 40, No. 1 (Jan. 7, 1931), London, pp. 12, 14-15, ills.

— The Royal Air Force of to-day.

Aeroplane, Vol. 40, No. 25 (June 24, 1931), London, pp. 1182, 1184-1184B, 1186, 1188, ills.

— The twelfth Royal Air Force Display.

The Aeroplane, Vol. 41, No. 1 (July 1, 1931), London, pp. 20-38, ills.

— The work and training of the Royal Air Force.

Aeroplane, Vol. 40, No. 9, 16 (March 4, April 22, 1931), London, pp. 370, 372, 374, 376, 718, 720-721, ills.

McALERY, C. M. The work and training of the Royal Air Force. III—communications.
Aeroplane, Vol. 40, No. 22 (June 3, 1931), London, pp. 1034, 1036, 1038-1039, ills.

McCAFFERY, RICHARD STANISLAUS, and DANIEL EDWARD KRAUSE. Air discharge of circular tuyeres.
New York, American Institute of Mining and Metallurgical Engineers, inc., 1931, pp. 10, ills., tabs. Technical Publication No. 385, Class C, Iron and Steel, No. 64.

MCCLENCH, MARION H. On becoming air-minded.
U.S. Air Services, Vol. 16, No. 2 (Feb. 1931), Washington, pp. 52, 54.

MACCRACKEN, WILLIAM P., jr. National conference on uniform aeronautic regulatory laws. Special problems in aeronautic legislation.
Air Law, Review, Vol. 2, No. 4 (Nov. 1931), New York, pp. 479-484.

MACCRACKEN, WILLIAM PATTERSON. *See* New York: Report of the fact-finding committee on suitable airport facilities for the New York metropolitan district.

MACCREADIE, WILLIAM THOMAS. On the stability of the motion of a viscous fluid.
Proceedings of the National Academy of Sciences, Vol. 17, No. 6 (June 1931), Washington, D.C., pp. 381-388.

McCUDDEN, JAMES THOMAS BYFORD. Flying fury.
London, J. Hamilton ltd., 1930, pp. xvii, 270, ills.
Introduction by C. G. Grey. Illutsrated by Leonard Bridgman.

McCUTCHEON, W. W. Aircraft finishes.
Aero Digest, Vol. 19, No. 2 (Aug. 1931), New York, pp. 49, 128, ills.

MACDONALD, AUSTIN F. Airport problems of American cities.
Annals of the American Academy of Political and Social Science, Vol. 151, Philadelphia, 1930, pp. 60.

McDONNELL, J. S., JR. Present status of transatlantic service.
Airway Age, Vol. 12, No. 5 (May 2, 1931), New York, pp. 460-461.

— Trans-Atlantic service. Parts 1, 2, and 3.
Airway Age, Vol. 12, Nos. 2, 3, 4 (Feb., Mar., Apr., 1931), New York, pp. 134-137, 242-244, 348-351, ills., tabs.

McDONNELL airplane. *See* Soule, Hartley Akin.: The effect of slots and flaps on the lift and drag of the McDonnell airplane as determined in flight.

McDONOUGH, JOHN. Airmanship; a complete guide and flying course for student pilots including the operation of aircraft in the field, on wheels, skis and floats.
London, New York, Sir I. Pitman & Sons, ltd., 1931, pp. xiii, 108, ills.

McGIRR, MILDRED PATTERSON. Bank travel bureaus and air transport.
Nat. Aer. Mag., Vol. 9, No. 12 (Dec. 1931), Washington, pp. 23-26.

McGRANE, Lawrence H. Eyes—How to correct them.
Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Cal., pp. 32-34, ills.

MACGREGOR, JOHN D. Development of Inter-American air transport.
U.S. Air Services, Vol. 16, No. 5 (May 1931), Washintgton, p. 54.

McGUINNESS, E. A. The airplane simply explained: for junior pupils of aircraft training schools.
London, Sir Isaac Pitman & Sons., pp. 65, ills.

MACHINE guns. *See* Great Britain: Increased armament for British military aeroplanes.

MACKALL, K. W. U.S. aerodrome lighting. Details and characteristics of the various types of aerodrome lights in current use.
Aircraft Engineering Vol. 3, No. 33 (Nov. 1931), London, pp. 285-290, ills., diagrs., tabs.

MACKENZIE, ROBERT J. The regulation of aerial common carriers.
Aero Digest, Vol. 19, No. 5 (Nov. 1931), New York, pp. 27, 100.

MCLEAN, SIR ROBERT. Has Schneider racing been worth while.
Aeroplane, Vol. 41, No. 13 (Sept. 23, 1931), London, pp. 782-784, ill.

MCNAIR, MALCOLM PERRINE. *See* Gragg, Charles Inso, and Malcolm Perrine
McNair: Cases on marketing airplanes.

MACPHERSON, HARRY E. Society. A market for airplanes.
Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Cal., p. 45, ill.

MACREADY, JOHN R. Way way up!
Western Flying, Vol. 9, No. 3 (March 1931), Los Angeles, Cal., pp. 35, 93.

MACSWEENEY, E. F. Civil aviation in the Irish Free State.
Aeroplane, Vol. 41, No. 7 (Aug. 1931), London, pp. 441-442.

MADDELENA, U. Lotte e vittorie sul mare e nel cielo.
Rome, 1931.

MAGALDI, G. I progressi della sicurezza aerea e il recente Congresso di Parigi.
L'Aerotecnica, Vol. 11, N. 6-7 (giug-lugl. 1931), Roma, pp. 730-740.
English abstract p. 893.

MAGNAN, A., et A. SAINTE-LAGUE. Aérodynamique.—Sur la distribution des vitesses aérodynamiques autour d'un avion en vol.
C. R. Acad. Sci., T. 192, No. 13 (30 mars 1931), Paris, pp. 795-797, ill.

MAGNESIUM. *See* Archbutt, S. L., and J. W. Jenkin: Mechanical properties of pure magnesium and certain magnesium alloys in the wrought condition—(continued).

— *See* Harvey, H. G.: Magnesium and its alloys in aircraft.

— *See* Sutton, H., and L. F. Le Brocq: The protection of magnesium alloys against corrosion.

MAGOUN, FREDERICK ALEXANDER, and ERIC HODGINS. A history of aircraft.
New York and London, Whittlesey House, McGraw-Hill Book Company, inc., 1931, pp. xx, 495, ills.

MAGUIRE, CHARLES JOSEPH. Aerology; a ground school manual in aeronautical meteorology.
New York and London, McGraw-Hill Book Company, 1931, pp. xii, 136, ills., maps, diagrs.

MAHACHEK, ROSS. Flying.
London, Putnam, 1931.

MAHS, FRHR. VON. *See* Ronde, Hans, und Frhr. von Mahs: Der Luftschutz, von Hans Ronde, Der Kollektivschutz der Bevökerung gegen Luftangriffe und die Sicherung lebenswichtiger Betriebe, von Frhr. von Mahs.

MAIDENS, A. L. *See* Irving, H. B., A. S. Batson, and A. L. Maidens: Rolling and sideslip experiments on a model slotted biplane of R. A. F. 31 section.

MAIDMENT, C. C. Servicing the exported engine.
Airway Age, Vol. 12, No. 10 (Jun. 6, 1931), New York, pp. 591-592, ills.

MAIL. \$15,000,000 re-divided. What the redistribution of the air mail funds means to the contractors.
Western Flying, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Calif., pp. 27-28.

MAIL. Flygtechniska problem vid nattpostflygning.
Flygning, Årg. 9, N: R 3 (Mars 1931), Stockholm, pp. 53-55.

— Night flying and air mails.
Aeroplane, Vol. 40, No. 11 (March 18, 1931), London, pp. 467-468, 470, 472, 474, maps.

— Official awareness and mail-carriers—civil.
Aeroplane, Vol. 40, No. 15 (April 15, 1931), London, pp. 656, 658, ills.

— On mail versus passenger transport.
Aeroplane, Vol. 41, No. 6, 7 (Aug. 5, 12, 1931), London, pp. 337-340, 393-398, ills.

— U.S. air mail and passenger transport.
Aviation, Vol. 30, No. 3 (March 1931), New York, pp. 151-156, diagrs., tabls., maps.

— *See Africa*: The troubles of the African mail service.

— *See B., H.*: La poste transatlantique et les accords internationaux d'aviation marchande.

— *See Brown, Walter F.*: Glancing back at 1930. Mail by air.

— *See Courtney, Frank T.*: Trans-Atlantic air mail.

— *See Europe*: Europeiskt nattpostflygnat.

— *See Florman, Carl*: Night air mails.

— *See Glover, W. Irving*: Contract air mail's future.

— *See India*: De luchtpostdienst met Indië.

— *See India*: De postvluchten op Indië.

— *See India*: Wat schort er aan den Holland-Indië luchtpostdienst?

— *See Lawrance, Charles L.*: Air transport. The air mail service—Its development and cost.

— *See Lawrance, Charles L.*: Air transport. The economic value of the air mail system.

— *See Manning, George H.*: Mr. Brown sharpens his pencil and cuts air mail rates.

— *See Montagnes, James*: The Arctic air mail.

— *See National Air Transport*: N. A. T.-Ford wing mail compartments.

— *See National Foreign Trade Council*: Our air mail service with Latin America.

— *See Radcliffe, Frank*: Technical features of the air mail.

— *See Rocca, Carlo*: Posta aerea.

— *See Rocca, Carlo*: Le tariffe di posta aerea e la convenienza della loro moderazione.

— *See Stephen, von*: General postmeister Dr. von Stephen und die Luftfahrt.

— *See United States Congress*. Senate. Committee on Post Offices and Post Roads: Establishment of air mail routes . . . Report to accompany H.R. 11704.

— *See United States Post Office Department*: Air mail contracts.

MAINTENANCE. Conditioning floats and hulls.

Aviation, Vol. 30, No. 5 (May 1931), New York, pp. 295-298, illus.

- Field-testing altimeters and airspeed indicators.
Aviation, Vol. 30, No. 2 (Feb. 1931), New York, pp. 112-113, illus.
- Operations and maintenance on the Ludington line.
Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 54-55.
- Organizing airline maintenance.
Aviation, Vol. 30, No. 2 (Feb. 1931), New York, pp. 87-91, illus.
- Servicing Pratt & Whitney engines.
Aviation Engineering, Vol. 5, No. 4 (Nov. 1931), Washington, N.J., pp. 41-42, 44, 46, 48, illus.
- See Boedecker, Kenneth J.: Engine servicing and service organizations.
- See Boedecker, Kenneth J.: Overhaul of Wright aircraft engines.
- See Caldwell, Frank W.: Care of the detachable-blade, metal propeller.
- See Collins, Paul F.: Some points for economic operation.
- See Downey, H. C.: How maintenance costs were lowered.
- See Froesch, Charles: Servicing for operators.
- See Harris, Luther: Airline maintenance.
- See Harris, Luther: Keeping track of the maintenance dollar.
- See Johnson, J. B.: Fatigue of aircraft parts.
- See Kramer, George N.: Repairing and service for airplanes.
- See Marsh, W. Lockwood: The care and maintenance of aircraft; a complete course of instruction for ground engineers and light aeroplane owners contributed by various authors.
- See Ross, Louis F.: Servicing shock absorber struts.
- See Seymour, L. D.: Maintenance of transport equipment.
- See Tate, George, Jr.: Servicing aircraft instruments.
- See Wines, James P.: Instrument maintenance.

MAIORCA, SALVATORE. Airplane landing gear.

National Advisory Committee for Aeronautics, Technical Memorandums No. 627, July 2, 1931, Washington, July 1931, pp. 23, illus., diagrs., tabls.

MAITLAND, C. E., and A. E. WOODWARD NUTT. Flight tests on the variation of the range of an aircraft with speed and height.Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 521-527, diagrs. Rep. Mem. No. 1317. (Ae. 454.)
With an appendix by H. T. Tizard.**MAITLAND, C. E.** See Jones, B. Melvill, and C. E. Maitland: Records of the lateral motions of a stalled Bristol fighter aeroplane with slots upon the upper wing tips. Experiments made in the Cambridge University Air Squadron.

- See Jones, E. T., and C. E. Maitland: Stalled flight tests of a Moth fitted with auto control slots and interceptors.

MAKHONINE. L'avion Makhonine à surface variable.L'Aérophile, 39^e année, No. 9 (15 sept. 1931), Paris, p. 262, illus.

MALAPARTE, CURZIO & FALQUI. *Vita di Pizzo Ferro detto Italo Balbo.*
Roma, Littorio, 1931.

MALAY STATES. *Malayen-Staaten. Verordnung.*
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 13-14 (4. April 1931), Berlin, p. 92.

MALVANI, PIETRO. *La difesa aerea da terra.*
Roma, "Tiber", 1931-IX, pp. 187, ills.

MANLY, G. *Aviation from the ground up.*
Chicago, F. Drake & Co.

MANNING, GEORGE H. *Mr. Brown sharpens his pencil and cuts the air mail rates.*
Western Flying, Vol. 9, No. 3 (March 1931), Los Angeles, Calif., pp. 24-25.

— *What congress proposes.*
Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Cal., pp. 22-23, 89.

MANNING, LEROY. *Touring Europe by private plane.*
Aviation, Vol. 30, No. 4 (April 1931), New York, pp. 232-235, ill., map.

MANNING, W. O., and R. L. PRESTON. *A register of civilian aircraft.*
London, Sir Isaac Pitman & Sons, pp. 60.

MANOMETERS. *See* Betz, Albert: *Mikromanometer.*

— *See* Noyes, Richard Woodman: *An integrating manometer for use in wind tunnel pressure distribution measurement.*

— *See* Ower, E.: *A micromanometer of high sensitivity.*

MANUFACTURERS AIRCRAFT ASSOCIATION. *See* Patents: *Patent digest; abridgments of current U.S. airplane patents.*

MANZANEQUE FELTRER, LUIS. *El dominio del aire y la defensa nacional.*
Madrid, Agencia española de librería, 1931, pp. 271, ills.
Biblioteca A. E. L. militar, T. 8. Aeronáutica, T. 1.

MAPPING. *See* Baisley, H. K.: *Aerial mapping in Central America.*

— *See* Cochran-Patrick, C. K.: *Aerial reconnaissance mapping in northern Rhodesia.*

— *See* Montagnes, James: *Air-mapping the Canadian Northland.*

— *See* Taylor, H. W.: *Mapping Porto Rico from the sky.*

— *See* Vest, J. R. W.: *Charting Cuba's coastline from the sky.*

MAPS. *Air mapping 13,000 square miles.*
Western Flying, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Cal., p. 26.

— *Airway maps.*
Aero Digest, Vol. 19, No. 3 (Sept. 1931) New York, p. 46.
Region covered northern Illinois, southern Wisconsin and southern Michigan.

— *See* Dupuy, P.: *The "Kahn" system of map projection.*

— *See* Grant, Hugh Duncan: *Reading the weather map.*

— *See* United States Department of Commerce. Aeronautics Branch: *Air navigation maps.* July 1, 1931.

— *See* United States Department of Commerce, Aeronautics Branch: *Airway map of the United States,* August 1, 1931.

MAPS. *See* United States Department of Commerce, Aeronautics Branch: Airway strip map list.

— *See* United States Department of Commerce. Aeronautics Branch: List of air navigation charts. October 15, 1929.

MARBEN, ROLF. *Ritter der luft, Zeppelinabenteuer im Weltkrieg, berichte von kriegsteilnehmern.*

Hamburg, Broschek & Co., 1931, pp. 191, ills.

MARCH, HERMAN WILLIAM. *See* Trayer, George W., and H. W. March: Elastic instability of members having sections common in aircraft construction.

MARCHETTI. *L'hélice à pas variable Marchett.*

L'Aérophile, 39^e année, No. 12 (15 déc. 1931), Paris, p. 371, ill.

MARCOTTE, E. *Les moteurs à huile lourde dans l'aéronautique.*

Revue des Combustibles Liquides, No. 79, suppl., Paris, pp. 29, ills.

MARDLES, R. *Oxidation characteristics of fuel vapours with regard to engine detonation.*

Aer. Res. Comm., Rep. Mem., No. 1374 (E. 46-I. C. E. 789), November 1930, London, 1931, pp. 27, ills., diagrs., tabls.

MARGOULIS, W. *Le prix de la stabilité longitudinale de l'avion et du "canard."*
L'Aéronatique, 13^{me} année, No. 144, Bulletin L'Aérotechnique, 9^e année, No. 101 (mai 1931), Paris, pp. 169-171, diagrs.

MARIE, EUGÈNE ARMAND. *Le Congo à six jours de Paris.*

Paris, Les Étincelles, 1931, pp. 242, ills., maps.

MARK I. A. *See* Jones, D. A.: The R. A. F. automatic observer Mark IA.

MARMONNIER. *See* Automatic stability: Deux dispositifs de stabilisation automatique. Le dispositif de stabilité par gyroscopes Marmonnier. Les girouettes de stabilisation Constantin.

MARMONIER, L. *La stabilità e il comando automatico dei velivoli.*

Riv. Aer., Anno 7, N. 6 (giugno 1931), Roma, pp. 509-530, ills.

— *La stabilité et al direction automatiques des avions.*

Lyon, Bosc Frères, M. & L. Riou, 1930, pp. 30, ills.

MAROLLES, R. J. DE. *The 1930 Paris show . . . European and American practices.*

Aviation, Vol. 30, No. 2 (Feb. 1931), New York, pp. 76-79, ills.

— *The twelfth Paris aero show. Tendencies to design reviewed and some of the more notable exhibits described.*

Aircraft Engineering, Vol. 3, No. 23 (Jan. 1931), London, pp. 3-8, ills.

MARSH, E. T. *See* Gelalles, Achilles George, and E. T. Marsh: Effect of orifice length-diameter ratio on the coefficient of discharge of fuel-injection nozzles.

— *See* Rothrock, Addison M., and E. T. Marsh: The effect of injection-valve opening pressure on spray-tip penetration.

— *See* Rothrock, Addison M., and E. T. Marsh: Penetration and duration of fuel sprays from a pump injection system.

MARSH, W. LOCKWOOD. *The care and maintenance of aircraft; a complete course of instruction for ground engineers and light aeroplane owners contributed by various authors.*

London, Airways Publications, Ltd., 1931, pp. 108, ills, diagrs. 2d. edition.

"This book is a reprint of a series of articles that were published in the first 15 issues of Aircraft Engineering."

MARSHALL, FRED F. The airplane—how and why it flies.
U.S. Air Services, Vol. 16, No. 1 (Jan. 1931), Washington, pp. 42-44.

MARTELLONI, GIOVANNI F. Orazione non detta per il volo atlantico dell'aquila di Roma.
Firenze, stab. tip. G. Spinelli e C., 1931, pp. 41.

MARTIAL law. See Fixel, Rowland W.: Use of aircraft during martial law.

MARTIN. See Lowell, James R.: For business and pleasure, Martin uses a plane.

MARTIN, EUGENE. Randy Starr after an air prize; or, the sky flyers in a dash down the states . . . illustrated by Howard L. Hastings.
Philadelphia, Henry Altemas Company, 1931, iv, 5-212, ills.
His Sky flyers series.

MARTIN, GLENN L. The development of aircraft manufacture.
Aviation Engineering, Vol. 5, No. 5 (Dec. 1931), Washington, N.J., pp. 28-35, ills.
Journ. Roy. Aer. Soc., Vol. 35, No. 250 (Oct. 1931), London, pp. 894-927, ills.
Wilbur Wright Memorial Lecture.

— See Wilbur Wright Memorial Lecture: The Wilbur Wright Memorial Lecture. [Glenn L. Martin, The Development of air craft manufacturing.]

MARTIN, HARALD. King's Cup under 10 år.
Flygning, Årg. 9, N:R 9 (Sept. 1931), Stockholm, pp. 170-171, 185, ills.

— Tiger moth—De Havillands senaste skapelse ett universal—ovningsplan for militart bruk.
Flygning, Årg. 9, N:R 11 (Nov. 1931), Stockholm, pp. 218, 223, ills.

— Världens längsta luftfartslinje.
Flygning, Årg. 9, N:R 7 (Juli 1931), Stockholm, pp. 138-139, map., diagr.

MARVIN, CHARLES F. See Miller, James Nevin: Newest aids for the "Sky Climbers."

MARVIN, CHARLES FREDERICK, Jr., and ROBERT D. BEST. Flame movement and pressure development in an engine cylinder.
National Advisory Committee for Aeronautics, Report No. 399, Oct. 17, 1931, Washington, U.S. Government Printing Office, 1931, pp. 12, ills., diagrs., tabls.

MARVINGT, MARIE. L'aviation sanitaire coloniale aux derniers congrès d'aéronautique.
L'Aérophile, 39e année, No. 11 (15 nov. 1931), Paris, p. 322.

MATERIALS. See American Society for Testing Materials: Symposium on aircraft materials.

— See Brenner, Paul: Baustofffragen bei der Konstruktion von Flugzeugen.

— See Johnson, J. B.: Progress in aircraft material development.

— See Pearson, John B.: Materials in 1930.

— See Rechtlich, Arved: Grundlagen für die Konstruktive Anwendung und Ausführung von Stahlrohrschweissungen im Flugzeugbau.

MATHIAS, GOTTHOLD. Einfluss der Flügelumrissform und der Querruderabmessungen auf die Quersteuerbarkeit beim Eindecker.
Jahrbuch 1931 der Deutschen Versuchsanstalt für luftfahrt, E. V., München und Berlin, 1931, pp. 712-726, diagrs.

MATRICARDI, ATTILIO. Particolari forme di impiego dell'armata aerea.
Riv. Aer., Anno 7, n. 12 (dic. 1931), Roma, pp. 434-451.

MATTEI, PIETRO. L'armata aerea a l'aviazione da bombardamento.
Riv. Aer., Anno 7, n. 6 (giugno 1931), Roma, pp. 413-423.

— L'armata aerea e l'aviazione de ricognizione strategica.
Riv. Aer., Anno 7, n. 12 (dic. 1931), Roma, pp. 456-462.

MATTHIAS, JOACHIM. Das neue Segelfluglager Borkum. Segelflieger auch über der Nordsee.
Luftschau, 4. Jahrg., Nr. 14 (24. Juli 1931), Berlin, p. 17.

MATTHAES, KURT. Statische und dynamische Festigkeitseigenschaften einiger Leichtmetalle.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 439-484, ills., diagrs., tabls.

MAUBOUSSIN. The Mauboussin M 11 touring airplane (French). A two-place high-wing monoplane.
National Advisory Committee for Aeronautics, Aircraft Circulars No. 145, May 22, 1931, Washington, May 1931, pp. 3, ills.

MAUGERI, FRANCO. Note sull'impiego del siluro.
Riv. Aer., Anno 7, n. 2 (feb. 1931), Roma, pp. 229-239, diagrs.

MAYER, HERBERT C. The changing emphasis on flight training.
U.S. Air Services, Vol. 16, No. 5 (May 1931), Washington, pp. 28-29.

— The flying school and aeronautic expansion.
U.S. Air Services, Vol. 16, No. 1 (Jan. 1931), Washington, pp. 38-39.

MAYO, WILLIAM B., and ANTHONY H. G. FOKKER. Metal vs. wood. Large metal airplanes, by William B. Mayo. An answer to Mr. Mayo, by Anthony H. G. Fokker.
Western Flying, Vol. 10, No. 4 (Oct. 1931), Los Angeles, Cal., pp. 30-31, 54, ports.

MAZUIR, P. Traité de télémétrie.
1931, pp. xx, 329, ills.

MECHANICAL TESTING. See Gerard, I. J.: The primary importance of mechanical testing in aircraft construction.

MECHANICS. See Gernsback, Hugo, and Emanuel Stierl: Aviation mechanics.

MEDICINE. Aviation medicine. . . .
Army Medical Bulletin, No. 26. Carlisle Barracks, Pa., Published at the Medical Field Service School, Sept. 1931, pp. 139, ills., tabl.

— L'aviation sanitaire devant la XIV^e Conférence internationale de la Croix rouge Bruxelles 6-11 octobre 1931 par Ch. L. Julliot avec un preface de M. Etienne Riché.
Paris, Chez A. Pedone.

— See Fombeure, G.: L'altération du sens des couleurs.

— See Garsaux, Paul: Les examens médicaux et la navigation.

— See Great Britain. Air Ministry: Manual for medical officers of the Royal Air Force . . . 2nd edition 1931.

— See Làmari, Vittorio: Sul mal degli aviatori . . .

— See United States Department of Commerce, Aeronautics Branch: Medical examiners of the aeronautics branch. June 1, 1931.

MENASCO MOTORS, INC. Engine handbook for Menasco B-4 pirate.
Los Angeles, California, Menasco Motors, 1931, pp. 92, ills.

MENDOZA, SAVERIO LAREDO DE Gabriele d'Annunzio aviatore di guerra.
Milano, 1931, pp. 550.

MEOPHAM. The Meopham accident. Technical report by the accidents investigation sub-committee of the Aeronautical Research Committee.
Flight, No. 1153, Vol. 23, No. 5 (Jan. 30, 1931), London, p. 104.

— On the Meopham accident.
Aeroplane, Vol. 40, No. 4 (Jan. 28, 1931), London, pp. 138, 140, 142, ill.

MEREDITH, F. W. Air transport in fog.
Journ. Roy. Aer. Soc., Vol. 35, No. 242 (Feb. 1931), London, pp. 75-95, illus.

MERRILL, ALBERT A. The stagger-decalage biplane.
Mech. Eng., Vol. 53, No. 5 (May 1931), New York, pp. 350-352, illus., diagrs.

METAL CONSTRUCTION. See Fritsche, Carl B.: The metalclad airship.

— See Gabrielli, G.: Problemi moderni nella costruzione metallica degli aeroplani.

— See Guzzoni, G., e E. Nardi: La saldatura dei materiali metallici, le sue applicazioni nelle costruzioni aeronautiche.

— See Koppenhöfer, A.: Versuchsentwicklung im Metallgerüstbau.

— See Mayo, William B., and Anthony H. G. Fokker: Metal vs. wood. Large metal airplanes, by William B. Mayo. An answer to Mr. Mayo, by Anthony H. G. Fokker.

— See Southern Aircraft: The metal "Martlette."

METALCLAD AIRSHIP. See Fritsche, Carl B.: The metalclad airship.

METALLURGY. See Johnson, J. B.: Dependence of aviation on metallurgy.

— See Labò, Adelaide: La chimica metallurgica nell'industria aeronautica.

METALS. Sheet metal work for aircraft.

Flight, No. 1188, Vol. 23, No. 40 (Oct. 2, 1931), London, pp. 1000-1001, illus.

— See Archbutt, S. L., and J. W. Jenkin: Mechanical properties of pure magnesium and certain magnesium alloys in the wrought condition—(continued)

— See Brenner, Paul: Ergebnisse von Korrosions- und Oberflächen-schutz-versuchen mit Aluminium-Walzlegierungen.

— See Gambioli, Mario: Apparecchi per prove pratiche di corrosione dei metalli.

— See Gough, H. J., and H. L. Cox: The behaviour of a single crystal of antimony subjected to alternating torsional stresses.

— See Gough, H. J., and H. L. Cox: Further experiments on the behaviour of single crystals of zinc subjected to alternating torsional stresses.

— See Grogan, J. D., and T. H. Schofield: Report on some properties of alloys of aluminium with thorium and silicon.

— See Horn, Hans A. und Karl Tewes: Die Schweißung von Elektronmetall im Flugzeugbau.

— See Jenkin, C. F., and G. D. Lehmann: High frequency fatigue.

METALS. *See* Matthaes, Kurt: *Statische und dynamische Festigkeitseigenschaften einiger Leichtmetalle.*

- *See* Ridder, E. I. de: *The use of elektron metal in airplane construction.*
- *See* Schmidt, Erich K. O.: *Seewasserbeständigkeit galvanischer Überzüge auf Eisen und Leichtmetallen.*
- *See* Schraivogel, K.: *Einfluss der Probestabform auf Zugfestigkeit und Bruchdehnung von dünnen Leichtmetallblechen.*
- *See* Silvestri, Armando: *I metalli leggeri all'esposizione e Congresso Internationale di Fonderia.*
- *See* Wright, S. J.: *The elasticity of pintsch crystals of tungsten.*

METEOROLOGY. *Anleitung zur Ausführung meteorologischer Beobachtungen auf Flugwetterposten.*

Weimar, Selbstverlag, pp. 26, ills. Herausgegeben von der Thüringischen Landeswetterwarte. Zweite Ausgabe 1930.

- Betriebsordnung für den internationalen flugwetterdienst mit deutschen ausführungsbestimmungen.
Berlin, Verlag Gebr. Radetzki, 1931, pp. 20.
- Meteorology and air navigation.
Flight, No. 1159, Vol. 23, No. 11 (March 13, 1931), London, p. 239.
- Physics of the earth—III, Meteorology.
Bulletin National Research Council, No. 79, Feb. 1931, Washington, 1931, pp. 289, ills., diagrs., tabs.
- *See* Bolla, Filippo: *La frequenza del vento al suolo e a quote a Palermo.*
- *See* Bossolasco: *La Meteorologia e il volo a vela.*
- *See* Bryant, L. W.: *Note on change of wind with height.*
- *See* Cannegieter, H. G.: *Het Internationale Polljaar 1932–1933.*
- *See* Clover, Willis H.: *The weather and the pilot.*
- *See* Dobson, G. M. B.: *Ozone in the upper atmosphere and its relation to meteorology.*
- *See* Entwistle, F.: *The meteorological aspects of gliding.*
- *See* Eredia, Filippo: *Sulla meteorologia delle rotte aeree.*
- *See* Eredia, Filippo: *Sulla meteorologia radiotelegrafica.*
- *See* Fatuzzo, Giacomo: *Su una legge periodica delle precipitazioni mensili a tripoli.*
- *See* Grant, Hugh Duncan: *Reading the weather map.*
- *See* Hildebrandt: *Meteorologische Forschung für den Luftverkehr in Innenasien.*
- *See* Italy: *I principali tipi isobarici interessanti l'Italia.*
- *See* Küssner, Hans Georg: *Beanspruchung von Flugzeugflügeln durch Böen.*
- *See* Lange, K. O.: *Ergebnisse von Messungen vertikaler Windgeschwindigkeiten in der Atmosphäre.*

METEOROLOGY. *See* Little, Delbert M.: Some effects of California mountain barriers on upper air winds and sea-level isobars.

- *See* Lyon, Darwin O.: Il razzo nella meteorologia e nella scienza.
- *See* McAdie, Alexander: Airgraphics.
- *See* McAdie, Alexander, and E. Gold: Meteorological conditions during the air raid on London, Oct. 19-20, 1917.
- *See* Maguire, Charles Joseph: Aerology; a ground school manual in aeronautical meteorology.
- *See* Miller, James Nevin: Newest aids for the "Sky Climbers."
- *See* Montanari, D.: Sulla determinazione di correnti verticali per mezzo di paloni piloti.
- *See* Musella, Francesco: Anemometrografo Fascianelli modello 1930.
- *See* Musella, Francesco: Sul regime anemologico a quote a napoli. (Frequenza.—Vento prevalente.—Vento medio.—Tendenza.)
- *See* Palumbo, L.: Meteorologia e navigazione aerea.
- *See* Potter, Leslie S.: The navigation of the air and meteorology.
- *See* Rhode, Richard V., and Eugene E. Lundquist: Applied load factors in bumpy air. A preliminary study in the light of the meteorological data at present available.
- *See* Selga, Miguel: The velocity of the wind at Manila, Baguio, Iloilo and Cebu.
- *See* Shaw, Sir Napier: Manual of meteorology: Vol. IV: Meteorological calculus: Pressure and wind.
- *See* Sherlock, R. H., and M. B. Stout: An anemometer for a study of wind gusts.
- *See* United States Department of Agriculture. Weather Bureau: Tables for computing horizontal distance of pilot balloons. Aerological Division.
- *See* Van Orman, Ward T.: A preliminary meteorological survey for airship bases on the middle atlantic seaboard.
- *See* Weather vane: Een nieuwe windwijzer voor het nachtluchtverkeer.
- *See* Yancey, Lewis A.: Aerial navigation and meteorology.

METTAM, H. A. Meccanica semplice del volo circolare.

Riv. Aer., Anno 7, N. 7 (luglio 1931), Roma, pp. 102-105, ill., diagr.

— Performance requirements for airworthiness in Great Britain and the U.S.A.

Aeronautical Engineering, suppl. to the Aeroplane, Vol. 40, No. 12 (March 25, 1931), London, pp. 519-520, 522, 524, diagrs.

— Simple mechanics of circling flight.

Aeronautical Engineering, supplement to the Aeroplane, Vol. 40, No. 17 (April 29, 1931), London, pp. 783-784, ill., diagr., tabl.

MEUNIER, ÉMILE MARIE. Une nouvelle voie à l'avenir de l'aviation ouvrage posthume de Émile-Marie Meunier.

Paris, Les Presses Universitaires de France, 1931, pp. xxxi, 223, diagrs.

MEXICO. Mexiko. Gesetz. Mexikanisches Luftverkehrsgesetz vom 31. Dezember 1929.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 51 (19. Dez. 1931), Berlin, pp. 366-368.

— See Cooper, Mabel C.: The airlines of Mexico.

— See Cooper, Mabel C.: Airports of Mexico.

MEYER, ALEX. Das Neutralitätsrecht im Luftkriege.

Berlin, Carl Heymanns Verlag, 1931, pp. 105.

MEYER, LOUIS A. Simplified engineering and its application.

National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, pp. 25-26, ills., diagr.

MEYER, WILLY. Der Kampf um Nobile.

Berlin, Verlag Gebrüder Radetzki, 1931, pp. 360.

— Luftreiseführer für Mitteleuropa.

Leipzig, Verlag Bibliographisches Institut A.G., 1931, pp. 556.

— Verkehrsflieger berichten.

Berlin, Verlag Richard Carl Schmidt & Co., 1931, pp. 120, ills.

MEYERS. Meyers Luftreisebücher. Mitteleuropa. Primera guia para viajes aéreos. Publicada en cooperación con la Luft Hansa, a.g.

Leipzig, Bibliographisches Institut a.g., 1931, pp. 556, maps.

MICHAEL, FRANZ. Experiments with airplane brakes.

National Advisory Committee for Aeronautics, Technical Memorandums No. 636, Sept. 3, 1931, Washington, September 1931, pp. 28, ills., diagrs., tabls.

— Versuche mit Flugzeugbremsen.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 10. 11. Heft (28. Mai 15. Juni 1931), München und Berlin, pp. 302-312, 338-344, ills., diagrs., tabls.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 125-141, ills., diagrs., tabls.

MICHIGAN. Laws relating to aeronautics. Compiled under the supervision of Frank D. Fitzgerald, Secretary of State, By authority 1931.

Lansing, 1931, pp. 24.

— See Evans, Floyd E.: The Michigan Board of Aeronautics.

— See Fairbanks, Rollin J.: An American windtunnel. A description, with a historical introduction of the 8-ft. tunnel at the University of Michigan.

MICROMANOMETER. See Ower, E.: A micromanometer of high sensitivity.

MIELNIKOWA, BOLESLAWA. Charakterystyka smarów lotniczych.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 5, (Nr. 24), Warszawa, 1931, pp. 79-85, diagrs., tabls.

MILCH, ERHARD. See Deutsche Luft Hansa a.g.: Mitteleuropa, unter mitwirkung der Deutschen Luft Hansa a.g., mit einem geleitwort von Erhard Milch.

MILITARY aeronautics. On the Army and the Air Force.

Aeroplane, Vol. 40, No. 2 (Jan. 14, 1931), London, pp. 49-50, 52, 54, 56, ills.

— Two new military aircraft.

Flight, No. 1190, 1191, Vol. 23, No. 42, 43 (Oct. 16, 23, 1931), London, pp. 1033-1036, 1057-1061, ills.

— See Air Corps: The Air Corps' mass migration.

— See Air Corps: Plans for the Air Corps maneuvers.

MILITARY aeronautics. *See* Birnn, Roland: Such was the 1st provisional air division.

- *See* Boone, Andrew R.: What the Air Corps learned.
- *See* Cantoni, Alberto: L'aviazione civile e la difesa nazionale.
- *See* Davison, F. Trubee: The Air Corps.
- *See* Fairey, M. C. R.: Considérations sur avions de records et avions militaires.
- *See* Faure, Pierre: Vers un nouveau Charleroi (la guerre aérienne de demain).
- *See* Fucini, Mario: Alcuni aspetti del problema degli armamenti aerei.
- *See* Genzini, Carlo: L'aeroplano da caccia offensiva.
- *See* Giannini, Amedeo: Gli aeromobili militari.
- *See* Great Britain: Anti-aircraft gun and instrument drills (mobile and semi-mobile) 1931. The War Office.
- *See* Great Britain: Increased armament for military aeroplanes.
- *See* Great Britain: Instructions for practice, anti-aircraft artillery. 1931 . . . The War Office, 28th February, 1931.
- *See* Guerritore, Carlo: Alcune predisposizioni ed alcune norme da osservarsi per l'occultamento all'indagine ed alla offesa aerea dell'organizzazione e del funzionamento logistico di un'armata in linea.
- *See* Guerritore, Carlo: L'aviazione ausiliaria per il R. Esercito.
- *See* Hegener, Henri: Uit de eerste jaren der militaire luchtvaart.
- *See* Howard, Clinton W.: Development of military airplanes.
- *See* Italy: Rome to Rio in formation.
- *See* Lawrence, Charles L.: Commercial aviation—Its relation to national defense.
- *See* Lawrence, Charles L.: Linking aircraft problems to Navy treaty strength.
- *See* Manzaneque Feltre, Luis: El dominio del aire y la defensa nacional.
- *See* Matricardi, Attilio: Particolari forme di impiego dell'armata aerea.
- *See* Mattei Pietro: L'armata aerea a l'aviazione da bombardamento.
- *See* Mattei, Pietro: L'armata aerea e l'aviazione de ricognizione strategica.
- *See* Moffett, W. A.: The Progress of Naval Aviation.
- *See* Nistri, Umberto: Un metodo per l'addestramento del bombardiere e per il controllo sperimentale del tiro dall'alto.
- *See* Ord., J. Garesché: Cooperative training for air and ground troops.
- *See* Pynches, T. le G.: Aircraft armaments.
- *See* Ritter, Hans: Post-war fighter progress.
- *See* Robertson, F. A. de V.: The air exercises.

MILITARY aeronautics. *See* Robertson, F. A. de V.: No. 101 (Bomber) squadron.

— *See* Rowell, Ross E.: Expeditionary movements of aircraft.

— *See* Russell, Frank H.: The design and production of military aircraft.

— *See* Sarfatti, Gualtiero: *Principi fondamentali della condotta della guerra aerea.*

— *See* Sbernadori, Paolo: An aerial navy goes to sea.

— *See* Snowden Gamble, Charles Ferderick: The air weapon, being some account of the growth of British military aeronautics from the beginnings in the year 1783 until the end of the year 1929.

— *See* Stewart, Oliver: Single or twin-engined day bombers.

— *See* Studley, Barrett: Learning to fly for the Navy.

— *See* United States: The American naval airships.

— *See* United States Department of the Navy: Flight manual. Training seaplanes.

— *See* Voss: *Militärflugzeuge von heute.*

— *See* Webb, L. D.: The flying fleet heads south.

— *See* Wells, G. M.: Development of anti-aircraft matériel.

MILLER, HOWELL W. Determining the horsepower.

Airway Age, Vol. 12, No. 4 (Apr. 1931), New York, pp. 352-353, diagrs.

MILLER, IVAN W. The aircraft mechanics' handbook.

New York and London, McGraw-Hill Book Company, inc., 1931, pp. vii, 174, ills.

MILLER, JAMES NEVIN. Newest aids for the "Sky Climbers."

The Sunday Star (Magazine), Oct. 26, 1930, Washington, p. 10, ill., port.

MILLER, J. W. Has the airplane a future? A challenge to the aviation industry.

Western Flying, Vol. 10, No. 1 (July 1931), Los Angeles, Calif., pp. 21-25, ills.

MILLER, MARVEL P., and HARTLEY A. SOULÉ. Moments of inertia of several airplanes.

National Advisory Committee for Aeronautics, Technical Notes No. 375, May 5, 1931, Washington, May 1931, pp. 6, diagr., tabs.

MILLER, O. M. Planetabling from the air.

Geographical Review, Vol. 21, 1931, New York, pp. 201-212.

MILLER, PAUL A. Airplane landings in gusty surface winds.

Monthly Weather Review, Vol. 59, No. 1 (Jan. 1931), Washington, pp. 33-34.

MILLER, ROY A. A solution of the circular ring.

Airway Age, Vol. 12, No. 5 (May 2, 1931), New York, pp. 465-468, ills.

MILLS, P. W. F. Angles on practical flying.

London, C. Lockwood and son, 1931, pp. xi, 75, ills.

MINELLI, CARLO. Le ali dei velivoli e le loro strutture.

L'Aerotecnica, Vol. 11, N. 9 (sett. 1931), Roma, pp. 1091-1118, ills. Abstract in English, p. 1169.

— Moderni problemi sulle strutture aeronautiche.

Riv. Aer., Anno 7, N. 5 (mag. 1931), Roma, pp. 253-259.

MINELLI, CARLO. Sull'equilibrio longitudinale del velivolo ad ala deformabile. *L'Aerotecnica*, Vol. 11, N. 5 (mag. 1931), Roma, pp. 507-532, diagrs. English abstract, pp. 692-693.

MINNEAPOLIS. *See* Lindbergh, H. A.: Minneapolis municipal airport.

MIRGUET, H. À propos d'essais en vol. *L'Aérophile*, 39e année, No. 7 (15 juil. 1931), Paris, p. 197.

MISES, R. von. *See* Lamb, H.: Lehrbuch der Hydrodynamik.

MISZTAL, FRANCISZEK. Doświadczalne sprawdzenie teorji belek prostych o przekrojach wiótkich. *Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 5 (Nr. 21)*, Warszawa, 1931, pp. 23-28, illus., diagrs.

MITCHELL, R. J. Essais de maquettes d'hydravions au bassin des carènes. *L'Aéronautique*, 13 me année, No. 142, *L'Aérotechnique*, 9e année, No. 99 (mars. 1931), Paris, pp. 96-98, diagrs.

MITTELEUROPA. *See* Deutsche Luft Hansa A. G.: Mitteleuropa, unter mitwirkung der Detuschen Luft Hansa A. G.

MOCK, RICHARD M. Heinkel plane on the S. S. Europa. *Aero Digest*, Vol. 18, No. 1 (Jan. 1931), New York, p. 74.

MOCKLER, DON. Frank Goldsborough. *U.S. Air Services*, Vol. 16, No. 6 (June 1931), Washington, p. 33.

— The National Air Races for 1931. *U.S. Air Services*, Vol. 16, No. 10 (Oct. 1931), Washington, pp. 13-16, illus.

— What price airports? The pro and con of the landing fee situation and a suggested compromise. *U.S. Air Services*, Vol. 16, No. 12 (Dec. 1931), Washington, D.C., pp. 39-40.

MODELS. Concorso nazionale per modelli volanti. *Riv. Aer.*, Anno 7, n. 8 (agosto 1931), Roma, pp. 339-351.

— *See* Camm, F. J.: Model aeroplanes and airships, with special chapters on gliders, helicopters, wing-flapping models, kites, and full-size gliding.

— *See* Claudio, Carl Harry: Prize winners' book of model airplanes.

— *See* Fraser, Chelsea Curtis: The model aircraft builder.

— *See* Helbig, Hans: Das Jungfliegertreffen und der Modellwettbewerb für Segelflugmodelle Pfingsten 1931 auf der Wasserkuppe.

— *See* Ott, Joseph S.: Model airplanes; building and flying.

— *See* Winkler, Horst: Das hochleistungs- segelflugmodell, im auftrage des Jugendausschusses des Deutschen Luftfahrt-Verbandes e.v.

MÖLLER, W. Der flugmotor. Teil III, Moderne Flugmotoren. *Charlottenburg*, Verlag C. J. E. Volkmann, 1931, pp. 89, illus. Heft 9 der Sammlung: Flugzeugbau und Luftfahrt.

MOFFETT, WILLIAM A. Aviation has become an indispensable part of the fleet. *U.S. Air Services*, Vol. 16, No. 2 (Feb. 1931), Washington, pp. 43-44.

— Five progressive years in naval aviation. *Aero Digest*, Vol. 18, No. 3 (March 1931), New York, pp. 35-37, 124-128, illus.

— Glancing back at 1930. Naval aviation. *Western Flying*, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Cal., pp. 39.

MOFFET, WILLIAM A. The Progress of Naval Aviation.
Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 52-55, ills.

— The Schneider Seaplane Trophy—symbol of speed supremacy in the air.
Nat. Aer. Mag., Vol. 9, No. 3 (March 1931), Washington, pp. 45-48, ills.

MOHR, ADRIAN. 33 Jahre verschollen im packeis.
Leipzig, Verlag Gretlein & Co.

MOISIL, GR. C. Sur le mouvement d'un fil sur une surface.
Mathematica, Vol. 3, 1930, Cluj, pp. 144-150.

MOKRZYCKI, GUSTAW ANDREJZJ. Aviation.—Détermination du combustible nécessaire pour atteindre le plafond pratique.
C. R. Acad. Sci., T. 192, No. 16 (20 avril 1931), Paris, pp. 925-926.

— Pewne zagadnienie lotu na wysokość.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 2, Warszawa, 1930, pp. 5-7.

— Pomiar spółczynników wyczynów.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne, Nr. 4, Warszawa, 1930, pp. 20-22.

— Rozbieg startujących samolotów.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne, Nr. 3, Warszawa, 1930, pp. 26-30, ill.

— Sur les plus grandes distances franchissables en avion.
L'Aéophile, 39e année, No. 2 (15 fév. 1931), Paris, pp. 50-51, diagrs.

MOLCANOV Aerologija.
1931.

MOLEYNS, A. F. DE. Round Britain in the "Graf Zeppelin."
Aeroplane, Vol. 41, No. 12 (Sept. 16, 1931), London, pp. 726-726b, ills.

MOLTSCHANOFF, P. Polarfahrt im Nebel. Wolkenstudien während der Polar-fahrt des Luftschiffs "Graf Zeppelin."
Die Umschau, 35. Jahrg., Heft 36 (5. Sept. 1931), Frankfurt a.M., pp. 714-715, ill.

MONISH, BYRON HAROLD. Effect of variation of chord and span of ailerons on hinge moments at several angles of pitch.
National Advisory Committee for Aeronautics, Report No. 370, March 6, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 15, ills., diagrs., tabs.

MONO-SPAR. The first mono-spar monoplane.
Aeroplane, Vol. 41, No. 2 (July 8, 1931), London, pp. 122-126, ills.

— An interesting experiment.
Flight, No. 1176, Vol. 23, No. 28 (July 10, 1931), London, pp. 667-670, ills.

— The mono-spar Fokker.
Aeroplane, Vol. 41, No. 25 (Dec. 16, 1931), London, p. 1375, ills.

— The Mono-Spar light airplane (British). A twin-engined low-wing cabin monoplane.
National Advisory Committee for Aeronautics, Aircraft Circulars No. 148, July 28, 1931, Washington, July 1931, pp. 7, ills.

— The Monospar wing flies.
Flight, No. 1199, Vol. 23, No. 51 (Dec. 18, 1931), London, p. 1234, ills.

— Monospar wing for Fokker F. VII-3M.
Flight, No. 1173, 1177, Vol. 23, No. 25, 29 (June 19, July 17, 1931), London, p. 550, 693-696, ills.

MONTAGNES, JAMES. Air-mapping the Canadian Northland.
U.S. Air Services, Vol. 16, No. 8 (Aug. 1931), Washington, pp. 40-41.

MONTAGNES, JAMES. The Arctic air mail.
U.S. Air Services, Vol. 16, No. 12 (Dec. 1931), Washington, D.C., p. 25.

— Canada's aviation industry.
Western Flying, Vol. 10, No. 1 (July 1931), Los Angeles, Cal., p. 25.

— Largest short-wave operator in Canada.
U.S. Air Services, Vol. 16, No. 10 (Oct. 1931), Washington, pp. 29-30.

— Patrol operation.
Airway Age, Vol. 13, No. 10 (Sept. 5, 1931), New York, pp. 202-204.

— Plane parking in the Arctic.
Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, Cal., pp. 28-29, ill.

— Transport fish by airplane.
U.S. Air Services, Vol. 16, No. 11 (Nov. 1931), Washington, D.C., p. 42.

MONTANARI, D. Contributo allo studio del regime anemologico a Venezia.
L'Aeroteenica, Vol. 11, n. 6-7 (giug.-lugl. 1931), Roma, pp. 741-759, diagrs., tabls. English abstract, pp. 894-895.

— Sulla determinazione di correnti verticali per mezzo di palloni piloti.
L'Aeroteenica, Vol. 11, n. 3 (marzo 1931), Roma, pp. 318-325, diagrs. English abstract, p. 391.

MONTELUCCI, G. La detonazione nei motori a scoppio.
L'Aeroteenica, Vol. 11, No. 6-7 (giug.-lugl. 1931), Roma, pp. 781-788.

MOODIE, EDMUND L. Reaching a private market with flying clubs.
Aviation, Vol. 30, No. 8 (Aug. 1931), New York, pp. 470-472.

MOORE, C. S. See Spanogle, J. A., and C. S. Moore: Performance of a compression-ignition engine with precombustion chamber having high-velocity air flow.

MOORING. See Pitman, Ernest: A docking device for airships.

MOORING mast. See Pickett, Charles: The Empire State building mooring mast.

MORACZEWSKA, MARJA. Doczulanie emulsyj krajowych na czerwień i podczerwień. (Sensibilisation des émulsions du pays pour le rouge et l'infrarouge).
Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 7 (Nr. 38), Warszawa, 1931, pp. 79-84, ill., tabls.

MORACZEWSKA, MARJA, i WŁODZIMIERZ DANIEWSKI. O oświetleniu ciemni fotograficznej. (De l'éclairage de la schambre obscure photographique).
Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 6 (Nr. 30), Warszawa, 1931, pp. 93-96.

MORAZZONI, GIUSEPPE. Un pioniere dell'aeronautica, Vincenzo Lunardi; documenti inediti e saggio iconografico, raccolti da G. Morazzoni.
Milano, Antiquariato W. Toscanini, 1931, pp. 157, ill.

MORELLI, ERCOLE. L'aeronautica italiana nella battaglia di Vittorio Veneto (24 ottobre-4 novembre 1918).
Riv. Aer., Anno 7, N. 10 (ott. 1931), Roma, pp. 106-124.

MORTANE, JACQUES. Leur dernier vol.
Paris, Baudinière, 1931, pp. 250.

Moss, H. See King, R. O., and H. Moss: Detonation and lubricating oil.

— See King, R. O., and H. Moss: Detonation, mineral lubricating oils and blended fuels.

Moss, H. *See* King, R. O., and H. Moss: Detonation, spark-plug position, and engine speed.

MOTH. The new "Tiger Moth."

Flight, No. 1194, Vol. 23, No. 46 (Nov. 13, 1931), London, pp. 1121-1124, ills.

— Moth trainer.

Flight, No. 1175, Vol. 23, No. 27 (July 3, 1931), London, pp. 649-651, ills.

— *See* Great Britain. Air Ministry: The Moth two-seater light aeroplane. Gipsy Mark I engine.

— *See* Jones, E. T., and C. E. Maitland: Stalled flight tests of a Moth fitted with auto control slots and interceptors.

MOUNIER, P. J. J. De Amerikaansche vliegbalans over 1930.

Het Vliegveld, 15de Jaarg., No. 5 (Mei 1931), Amsterdam, pp. 159-160.

— Igor Sikorsky en zijn amphibievliegtuigen.

Het Vliegveld, 15de Jaarg., No. 1 (Jan. 1931), Amsterdam, pp. 25-28, ills.

— Mistbestrijding.

Het Vliegveld, 15de Jaarg., No. 8 (Aug. 1931), Amsterdam, p. 274, ills.

— Vliegende windmolens.

Het Vliegveld, 15de Jaarg., No. 10 (Oct. 1931), Amsterdam, pp. 350-354, ills.

MOUNT BATTEN. On the accident at Mount Batten.

Aeroplane, Vol. 40, No. 8 (Feb. 25, 1931), London, pp. 309-310.

MOUNTAINS. *See* Pinna, Pietro: L'aviazione in montagna.

MOYNAHAM, GEORGE B. Methods of testing welds. Survey of methods available for determining ability of welders and quality of welded products.

Metals & Alloys, Vol. 1, No. 13 (July 1930), New York, pp. 607-612, ill.

MUELLER, H., und H. PETERS. Geschwindigkeits- und Mengenmessungen von Flüssigkeiten.

Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 1. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. 553-634, ills.

MUIR, N. S. *See* Carter, B. C., and N. S. Muir: Torsional vibration of crankshafts. Beardmore "Tornado" airship engine investigations.

MUIR, N. S., and A. TERRY. A harmonic analysis of the torque curves of a single cylinder electric ignition engine when throttled to various mean indicated pressures, with an appendix on the estimation of forcing torques in multi-cylinder engines.

Aer. Res. Comm., Rep. Mem., No. 1305, (E. 41), March 1930, London, 1931, pp. 14, diagrs., tabs.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1104-1117, diagrs., tabs.

MULLER, CHARLES G. Business speaks up about flying.

Nat. Aer. Mag., Vol. 9, No. 11 (Nov. 1931), Washington, pp. 23-25, ills.

— Uses of aircraft in industry.

Nat. Aer. Mag., Vol. 9, No. 6 (June 1931), Washington, pp. 25-29, ills.

MUMNEY, NOLIE. Evolution of flight; stories based on legendary and historical data.

Denver, The Kendrick-Bellamy Co., 1931, pp. xiii, 123, ills.

— *See* Chase, John Samson, and Nolie Mumey: Physical requirements for commercial flyers.

MUNK, MAX MICHAEL. The aspect ratio. Article thirteen on the principles of aerodynamics.

Aero Digest, Vol. 19, No. 1 (July 1931), New York, pp. 49, 131.

— The center of pressure. Article eight on the principles of aerodynamics.

Aero Digest, Vol. 18, No. 2 (Feb. 1931), New York, pp. 54-55, 122, ills.

— The choice of a wing section. Article fifteen on the principles of aerodynamics.

Aero Digest, Vol. 19, No. 3 (Sept. 1931), New York, pp. 47, 116, diagr.

— The composite wing air flow.

Aero Digest, Vol. 18, No. 6 (June 1931), New York, pp. 54-55, 81, ill.

— The creation of lift by a wing section.

Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 56, 142, diagrs.

— The distribution of lift. Dr. Max M. Munk's seventeenth article on the principles of aerodynamics.

Aero Digest, Vol. 19, No. 5 (Nov. 1931), New York, pp. 32, 97, diagr.

— The induced drag.

Aero Digest, Vol. 18, No. 5 (May 1931), New York, pp. 60-61.

— The "M" wing sections. Article ten on the principles of aerodynamics.

Aero Digest, Vol. 18, No. 4 (April 1931), New York, pp. 56-57, ills.

— Mathematical wing sections. Dr. Max M. Munk's ninth article on the principles of aerodynamics.

Aero Digest, Vol. 18, No. 3 (March 1931), New York, pp. 51, 122-124, diagr.

— Means for increasing the lift. Dr. Max M. Munk's eighteenth article on the principles of aerodynamics.

Aero Digest, Vol. 19, No. 6 (Dec. 1931), New York, pp. 39, 97-98, ills.

— The measured lift of airfoils. Dr. Max M. Munk's sixteenth article on the principles of aerodynamics.

Aero Digest, Vol. 19, No. 4 (Oct. 1931), New York, pp. 46-47, 114-115, diagrs.

— Plotting wing characteristics. Article fourteen on the principles of aerodynamics.

Aero Digest, Vol. 19, No. 2 (Aug. 1931), New York, pp. 45, 54-56, diagrs.

MUNRO, WILLIAM. Hull design of flying boats.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1170, Vol. 23, No. 22 (May 29, 1931), London, pp. 478a-478d (33-36), diagrs., tabl.

MUREAUX. The Mureaux 111 R. 2 military airplane (French). A long-distance all-metal observation monoplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 142, April 25, 1931, Washington, April 1931, pp. 6, ills.

MURPHY, PAT. Grandstand observations at the air races.

Aero Digest, Vol. 19, No. 4 (Oct. 1931), New York, pp. 36-37.

MURPHY, PAUL. Armadas of the sky; the problem of armaments . . . foreword by Sir Max Pemberton, preface by Major-General Nealson G. Anderson. . . . London, The Houghton Publishing Co., 1931, p. 120.

MURRAY, R. STUART. From hangar to boulevard.

Aviation, Vol. 30, No. 2 (Feb. 1931), New York, pp. 92-93.

MUSELLA, FRANCESCO. Anemometrografo Fascianelli modello 1930.

Riv. Aer., Anno 7, N. 5 (mag. 1931), Roma, pp. 260-278, ills., diagr.

MUSELLA, FRANCESCO. *Disciplina delle radiocomunicazioni nella navigazione aerea.*

Riv. Aer., Anno 7, N. 3 (marzo 1931), Roma, pp. 472-482, map.

— *La radiogoniometria nella navigazione aerea.*

Riv. Aer., Anno 7, N. 8 (agosto 1931), Roma, pp. 259-280, diagrs.

— *Rete radiotelegrafica terrestre per la navigazione aerea.*

Riv. Aer., Anno 7, N. 4 (aprile 1931), Roma, pp. 90-99, map.

— *Sul regime anemologico a quote a napol. (Frequenza.—Vento prevalente.—Vento medio.—Tendenza).*

Riv. Aer., Anno 7, N. 12 (dic. 1931), Roma, pp. 514-537, diagrs., tabls.

MUTCHLER, W. H. *See* Buzzard, R. W., and W. H. Mutchler: *Advantages of oxide films as bases for aluminum pigmented surface coating for aluminum alloys.*

MUTTRAY, H. *Widerstand und Kühlwirkung eines Flugzeugrumpfes mit verschiedenen angeordnetem Kühler.*

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 3. Heft (14. Feb. 1931), München und Berlin, pp. 65-71, ills., diagrs.

MUZII, VITTORINO. *Cenni di meccanica, aerologia e topografia. Corso allievi piloti anno 1931.*

Roma, tip. lit. A. Sampaolesi, 1931, pp. 83.

MYSTERY, S. *See* Raffaelli, Italo: *L'autonomia del Mystery S.*

MYSTERY ship. The "Mystery ship" revealed. The fastest commercial plane yet flown, it has outperformed the best planes of the Army and Navy.

Scient. Amer., Vol. 144, No. 2 (Feb. 1931), New York, pp. 96-98, ills.

N

NACELLE. *See* Ower, E., and C. T. Hutton: *Interference of a streamline nacelle on a monoplane wing.*

NAGAL, TENJI. *See* Alloys: *Über die Herstellung und die mechanischen Eigenschaften der Al-Cu-Si Legierungen.*

NAKANISHI, FUJIO. *On the yield point of mild steel.*

Report of the Aeronautical Research Institute, Tôkyô Imperial University, No. 72 (Vol. 6, 6), (June 1931), Tôkyô, pp. 83-140, ills., diagrs., tabls.

NAPIER. *See* Wilkinson, G. S.: *Napier Lion series VIIB engine for 1927 Schneider Trophy.*

NAPIER, MONTAGUE. *Montague Napier.*

Aeroplane, Vol. 40, No. 4 (Jan. 28, 1931), London, p. 142.

NARDI, E. *See* Guzzoni, G., e E. Nardi: *La corrosione dei metalli e leghe usati in aeronautica.*

— *See* Guzzoni, G., e E. Nardi: *La saldatura dei materiali metallici, le sue applicazioni nelle costruzioni aeronautiche.*

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. *Aeronautic progress and the N.A.C.A.*

Aviation, Vol. 30, No. 7 (July 1931), New York, pp. 405-407, ills.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Aeronautics. Sixteenth annual report of the National Advisory Committee for Aeronautics, 1930, including Technical Reports Nos. 337-364.

Washington, United States Government Printing Office, 1931, pp. 787, ills., diagrs., tabls. Technical Reports. No. 337. The gaseous explosive reaction at constant pressure. The reaction order and reaction rate, by F. W. Stevens, pp. 67-82. No. 338. The effect of reduction gearing on propeller-body interference as shown by full scale wind tunnel tests, by Fred E. Weick, pp. 83-103. No. 339. Full scale wind tunnel tests with a series of propellers of different diameters on a single fuselage, by Fred E. Weick, pp. 105-120. No. 340. Full scale wind tunnel tests on several metal propellers having different blade forms, by Fred E. Weick, pp. 121-133. No. 341. The design and development of an automatic injection valve with an annular orifice of varying area, by William F. Joachim, Chester W. Hicks, and Hampton H. Foster, pp. 135-144. No. 342. Effect of turbulence in wind tunnel measurements, by H. L. Dryden and A. M. Kuethe, pp. 145-170. No. 343. Effect of variation of cord and span of ailerons on rolling and yawing moments at several angles of pitch, by R. H. Heald, D. H. Strother, and B. H. Monish, pp. 171-199. No. 344. The design of plywood webs for airplane wing beams, by George W. Trayer, pp. 201-217. No. 345. The design of airplane wing ribs, by J. A. Newlin and George W. Trayer, pp. 219-272. No. 346. Water pressure distribution on a flying boat hull, by F. L. Thompson, pp. 273-290. No. 347. A method of calculating the ultimate strength of continuous beams, by J. A. Newlin and George W. Trayer, pp. 291-318. No. 348. Strength of welded joints in tubular members for aircraft, by H. L. Whittemore and W. C. Brueggeman, pp. 319-359. No. 349. A proof of the theorem regarding the distribution of lift over the span for minimum induced drag, by W. F. Durand, pp. 361-375. No. 350. Working charts for the selection of aluminum alloy propellers of a standard form to operate with various aircraft engines and bodies, by Fred E. Weick, pp. 377-392. No. 351. Full scale wind tunnel tests of a propeller with the diameter changed by cutting off the blade tips, by Donald H. Wood, pp. 393-417. No. 352. Large-scale aerodynamic characteristics of airfoils as tested in the variable density wind tunnel, by Eastman N. Jacobs and Raymond F. Anderson, pp. 419-450. No. 353. Airfoil pressure distribution investigation in the variable density wind tunnel, by Eastman N. Jacobs, John Stack, and Robert M. Pinkerton, pp. 451-466. No. 354. Aircraft woods: Their properties, selection, and characteristics, by L. J. Markwardt, pp. 467-500. No. 355. Comparative flight performance with an N.A.C.A. Roots supercharger and a turbocentrifugal supercharger, by Oscar W. Schey and Alfred W. Young, pp. 501-514. No. 356. Strength of rectangular flat plates under edge compression, by Louis Schuman and Goldie Black, pp. 515-538. No. 357. Aircraft accidents. Method of analysis, by Committee on Aircraft Accidents of the National Advisory Committee for Aeronautics, pp. 539-555. No. 358. Temperature coefficient of the modulus of rigidity of aircraft instrument diaphragm and spring materials, by W. G. Brombacher and E. R. Melton, pp. 557-572. No. 359. An investigation of the effectiveness of ignition sparks, by Melville F. Peters, Wayne L. Summerville, and Merlin Davis, pp. 573-585. No. 360. Pressure distribution over a symmetrical airfoil section with trailing edge flap, by Eastman N. Jacobs and Robert M. Pinkerton, pp. 587-605. No. 361. Experimental determination of jet boundary corrections for airfoil tests in four open wind tunnel jets of different shapes, by Montgomery Knight and Thomas A. Harris, pp. 607-633. No. 362. An extended theory of thin airfoils and its application to the biplane problem, by Clark B. Millikan, pp. 635-667. No. 363. Pressure fluctuations in a common-rail fuel injection system, by A. M. Rothrock, pp. 669-684. No. 364. The pressure distribution over the wings and tail surfaces of a PW-9 pursuit airplane in flight, by Richard V. Rhode, pp. 685-787.

— Aircraft Circulars No. 132. Focke-Wulf F 19a "Ente" commercial airplane (German). A tail-first high-wing monoplane.

National Advisory Committee for Aeronautics, Jan. 23, 1931 (mimeographed), Washington, January 1931, pp. 9, ills.

— Aircraft Circulars No. 133. The Hanriot H 431 military airplane (French). A general purpose biplane.

National Advisory Committee for Aeronautics, Jan. 31, 1931 (mimeographed), Washington, January 1931, pp. 12, ills., tabl.

— Aircraft Circulars No. 134. The Amiot 140 M military airplane (French). An all-metal multiplace high-wing monoplane.

National Advisory Committee for Aeronautics, Feb. 13, 1931 (mimeographed), Washington, February 1931, pp. 7, ills.

— Aircraft Circulars No. 135. The Dewoitine D.30 commercial airplane (French). A high-wing cantilever monoplane.

National Advisory Committee for Aeronautics, Feb. 20, 1931 (mimeographed), Washington, February 1931, pp. 8, ills.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Aircraft Circulars No. 136. Latécoère 38-0 flying boat (French). A long-range sesquiplane for carrying mail.

National Advisory Committee for Aeronautics, Feb. 27, 1931 (mimeographed), Washington, February 1931, pp. 5, ills.

— Aircraft Circulars No. 137. Polish P type single-seat fighters. All-metal Gull-type wing monoplane.

National Advisory Committee for Aeronautics, March 3, 1931 (mimeographed), Washington, March 1931, pp. 10, ills.

— Aircraft Circulars No. 138. The Bleriot 110 airplane (French). A long-distance high-wing monoplane.

National Advisory Committee for Aeronautics, March 10, 1931 (mimeographed), Washington, March 1931, pp. 9, ills.

— Aircraft Circulars No. 139. The Bernard 120 seaplane (French). A 1,400 hp single-seat monoplane racer by Pierre Léglise.

National Advisory Committee for Aeronautics, March 17, 1931 (mimeographed), Washington, March 1931, pp. 5, ills.

— Aircraft Circulars No. 140. The Wibault 280 T. 10 commercial airplane (French). An all-metal, cantilever, low-wing monoplane.

National Advisory Committee for Aeronautics, March 24, 1931 (mimeographed), Washington, March 1931, pp. 5, ills.

— Aircraft Circulars No. 141. The C.A.M.S. 60 seaplane (French). A twin-engine bombing and torpedo monoplane.

National Advisory Committee for Aeronautics, March 31, 1931 (mimeographed), Washington, April 1931, pp. 8, ills.

— Aircraft Circulars No. 142. The Mureaux 111 R.2 military airplane (French). A long-distance all-metal observation monoplane.

National Advisory Committee for Aeronautics, April 25, 1931 (mimeographed), Washington, April 1931, pp. 6, ills.

— Aircraft Circulars No. 143. The S.P.C.A. 40 T commercial airplane (French). An all-metal cantilever monoplane.

National Advisory Committee for Aeronautics, April 30, 1931 (mimeographed), Washington, April 1931, pp. 3, ills.

— Aircraft Circulars No. 144. The "I.A.R." pursuit airplane (Roumanian). A one-place cantilever low-wing monoplane.

National Advisory Committee for Aeronautics, May 15, 1931 (mimeographed), Washington, May 1931, pp. 3, ills.

— Aircraft Circulars No. 145. The Mauboussin M 11 touring airplane (French). A two-place high-wing monoplane.

National Advisory Committee for Aeronautics, May 22, 1931 (mimeographed), Washington, May 1931, pp. 3, ills.

— Aircraft Circulars No. 146. The Dewoitine D 33 commercial airplane (French). A low-wing cantilever monoplane.

National Advisory Committee for Aeronautics, June 16, 1931 (mimeographed), Washington, June 1931, pp. 9, ills.

— Aircraft Circulars No. 147. The Bernard 80 G.R. long-distance airplane (French). A two-place cantilever monoplane.

National Advisory Committee for Aeronautics, July 11, 1931 (mimeographed), Washington, July 1931, pp. 6, ills.

— Aircraft Circulars No. 148. The Mono-Spar light airplane (British). A twin-engined low-wing cabin monoplane.

National Advisory Committee for Aeronautics, July 28, 1931 (mimeographed), Washington, July 1931, pp. 7, ills.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Aircraft Circulars No. 149. Breguet 390 T commercial airplane (French). A ten-seat all-steel sesquiplane. National Advisory Committee for Aeronautics, Aug. 11, 1931 (mimeographed), Washington, August 1931, p. 4, ills.

— Aircraft Circulars No. 150. The Avro 627 "Mailplane" (English). A single-seat biplane. National Advisory Committee for Aeronautics, Aug. 31, 1931 (mimeographed), Washington, August 1931, pp. 8, ills.

— Aircraft Circulars No. 151. Breguet military airplane, Type 33. A two-place long-distance sesquiplane for observation and bombing. National Advisory Committee for Aeronautics, Sept. 25, 1931 (mimeographed), Washington, September 1931, pp. 16, ills.

— Aircraft Circulars No. 152. Potez 37R2 military airplane. A two-place long-distance observation monoplane. National Advisory Committee for Aeronautics, Sept. 30, 1931 (mimeographed), Washington, September 1931, pp. 5, ills.

— Aircraft Circulars No. 153. The Guillemin J.G.10 (French). A two-place touring low-wing monoplane. National Advisory Committee for Aeronautics, Nov. 12, 1931 (mimeographed), Washington, November 1931, pp. 4, ills.

— Aircraft Circulars No. 154. The Supermarine S.6.3. racing seaplane (British). A low-wing twin-float monoplane. National Advisory Committee for Aeronautics, Dec. 30, 1931 (mimeographed), Washington, December 1931, pp. 6, ills.

— America's new water tank. Flight, No. 1200, Vol. 23, No. 52 (Dec. 25, 1931), London, p. 1270, ill.

— Bibliography of aeronautics 1929, by Paul Brockett. Washington, United States Government Printing Office, 1930, pp. vi, 242.

— The design of injection nozzles. A summary of five N.A.C.A. reports on systematic investigations of practical use for engineers. Aircraft Engineering, Vol. 3, No. 33 (Nov. 1931), London, pp. 281-284, ills., diagrs.

— Les nouvelles installations de recherche du N.A.C.A. L'Aéronautique, 13me année, No. 150 (nov. 1931), Paris, pp. 390-391, ills.

— Recente attività di recerche nel campo aeronautico. Riv. Aer., Anno 7, N. 12 (dic. 1931), Roma, pp. 580-585, ills.

— Recherches américaines sur la formation de la glace à bord des avions en vol. L'Aéronautique, 13me année, No. 149 (oct. 1931), Paris, pp. 367-368, ills.

— Report No. 364. The pressure distribution over the wings and tail surfaces of a PW-9 pursuit airplane in flight, by Richard V. Rhode. National Advisory Committee for Aeronautics, Jan. 26, 1931, Washington, U.S. Government Printing Office, 1930 [1931], pp. 103, ills., diagrs., tabls.

— Report No. 365. Aerodynamic characteristics of circular-arc airfoils at high speeds, by L. J. Briggs and H. L. Dryden. National Advisory Committee for Aeronautics, Jan. 12, 1931, Washington, U.S. Government Printing Office, 1930, pp. 14, ills., diagrs., tabl.

— Report No. 366. Dynamic and flight tests on rubber-cord and oleo-rubber-disk landing gears for an F6C-4 airplane, by William C. Peck. National Advisory Committee for Aeronautics, Feb. 16, 1931, Washington, U.S. Government Printing Office, 1930 [1931], pp. 19, ills., diagrs., tabls.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Report No. 367. Pressure distribution over a thick, tapered and twisted monoplane wing model—N. A.C.A. 81-J, by Carl J. Wenzinger.

National Advisory Committee for Aeronautics, Feb. 24, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 16, ills., diagrs., tabls.

— Report No. 368. A new chart for estimating the absolute ceiling of an airplane, by Walter S. Diehl.

National Advisory Committee for Aeronautics, Mar. 6, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 7, diagrs., tabls.

— Report No. 369. Maneuverability investigation of the F6C-3 airplane with special flight instruments, by C. H. Dearborn, and H. W. Kirschbaum.

National Advisory Committee for Aeronautics, March 11, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 21, ills., diagrs., tabl.

— Report No. 370. Effect of variation of chord and span of ailerons on hinge moments at several angles of pitch, by B. H. Monish.

National Advisory Committee for Aeronautics, March 6, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 15, ills., diagrs., tabls.

— Report No. 371. Present status of aircraft instruments. Report prepared by the subcommittee on instruments.

National Advisory Committee for Aeronautics, Jan. 31, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 26.

— Report No. 372. The gaseous explosive reaction—the effect of pressure on the rate of propagation of the reaction zone and upon the rate of molecular transformation, by F. W. Stevens.

National Advisory Committee for Aeronautics, Feb. 28, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 19, ills., diagrs.

— Report No. 373. Coefficients of discharge of fuel injection nozzles for compression-ignition engines, by A. G. Gelalles.

National Advisory Committee for Aeronautics, March 31, 1931, Washington, U.S. Government Printing Office, 1931, pp. 19, ills., diagrs.

— Report No. 374. The automotive ignition coil, by T. H. Darnell.

National Advisory Committee for Aeronautics, April 20, 1931, Washington, U.S. Government Printing Office, 1931, pp. 28, ills., diagrs., tabls.

— Report No. 375. Full-scale tests of metal propellers at high tip speeds, by Donald H. Wood.

National Advisory Committee for Aeronautics, June 22, 1931, Washington, U.S. Government Printing Office, 1931, pp. 22, ills., diagrs., tabls.

— Report No. 376. Some approximate equations for the standard atmosphere, by Walter S. Diehl.

National Advisory Committee for Aeronautics, March 21, 1931, Washington, U.S. Government Printing Office, 1931, pp. 12, diagrs., tabls.

— Report No. 377. A method of flight measurement of spins, by Hartley A. Soulé and Nathan F. Scudder.

National Advisory Committee for Aeronautics, May 23, 1931, Washington, U.S. Government Printing Office, 1931, pp. 18, ills., diagrs., tabls.

— Report No. 378. Comparison of full-scale propellers having R.A.F.-6 and Clark Y airfoil sections, by Hugh B. Freeman.

National Advisory Committee for Aeronautics, June 17, 1931, Washington, U.S. Government Printing Office, 1931, pp. 20, ills., diagrs., tabls.

— Report No. 379. Rolling moments due to rolling and yaw for four wing models in rotation, by Montgomery Knight and Carl J. Wenzinger.

National Advisory Committee for Aeronautics, May 9, 1931, Washington, U.S. Government Printing Office, 1931, pp. 27, ills., diagrs., tabls.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Report No. 380. Pressure distribution over the fuselage of a PW-9 pur suit airplane in flight, by Richard V. Rhode and Eugene E. Lundquist.

National Advisory Committee for Aeronautics, May 16, 1931, Washington, U.S. Government Printing Office, 1931, pp. 29, ills., diagrs., tabls.

— Report No. 381. Static, drop, and flight tests on Musselman type air-wheels, by William C. Peck and Albert P. Beard.

National Advisory Committee for Aeronautics, June 26, 1931, Washington, U.S. Government Printing Office, 1931, pp. 20, ills., diagrs., tabls.

— Report No. 382. Elastic instability of members having sections common in aircraft construction, by George W. Trayer and H. W. March.

National Advisory Committee for Aeronautics, Aug. 12, 1931, Washington, U.S. Government Printing Office, 1931, pp. 42, ills., diagrs., tabls.

— Report No. 383. On the theory of wing sections with particular reference to the lift distribution, by Theodore Theodorsen.

National Advisory Committee for Aeronautics, Aug. 22, 1931, Washington, U.S. Government Printing Office, 1931, pp. 16, ills., diagrs., tabls.

— Report No. 384. The comparative performance of superchargers, by Oscar W. Schey.

National Advisory Committee for Aeronautics, April 15, 1931, Washington, U.S. Government Printing Office, 1931, pp. 15, ills., diagrs., tabls.

— Report No. 385. Wind tunnel tests on airfoil boundary layer control using a backward-opening slot, by Millard J. Bamber.

National Advisory Committee for Aeronautics, Sept. 8, 1931, Washington, U.S., Government Printing Office, 1931, pp. 38, ills., diagrs., tabls.

— Report No. 386. Maneuverability investigation of an F6C-4 fighting airplane, by C. H. Dearborn and H. W. Kirschbaum.

National Advisory Committee for Aeronautics, Aug. 8, 1931, Washington, U.S. Government Printing Office, 1931, pp. 25, ills., diagrs., tabls.

— Report No. 387. The vertical wind tunnel of the National Advisory Committee for Aeronautics, by Carl J. Wenzinger and Thomas A. Harris.

National Advisory Committee for Aeronautics, July 15, 1931, Washington, U.S. Government Printing Office, 1931, pp. 10, ills., diagrs.

— Report No. 388. Investigation of the diaphragm-type pressure cell.

National Advisory Committee for Aeronautics, July 9, 1931, Washington, U.S. Government Printing Office, 1931, pp. 18, ills., diagrs., tabls.

— Report No. 389. The effect of small angles of yaw and pitch on the characteristics of airplane propellers, by Hugh B. Freeman.

National Advisory Committee for Aeronautics, July 29, 1931, Washington, U.S. Government Printing Office, 1931, pp. 11, ills., tabls., diagrs.

— Report No. 390. The effect of valve timing upon the performance of a supercharged engine at altitude and an unsupercharged engine at sea level, by Oscar W. Schey and Arnold E. Biermann.

National Advisory Committee for Aeronautics, Aug. 14, 1931, Washington, U.S. Government Printing Office, 1931, pp. 13, ills., diagrs.

— Report No. 391. The aerodynamic characteristics of eight very thick airfoils from tests in the variable density wind tunnel, by Eastman N. Jacobs.

National Advisory Committee for Aeronautics, July 30, 1931, Washington, U.S. Government Printing Office, 1931, pp. 14, ills., diagrs., tabls.

— Report No. 392. Reduction of turbulence in wind tunnels, by Hugh L. Dryden.

National Advisory Committee for Aeronautics, Aug. 19, 1931, Washington, U.S. Government Printing Office, 1931, pp. 11, ills., diagrs., tabl.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Report No. 393. Span-load distribution as a factor in stability in roll, by Montgomery Knight and Richard W. Noyes.

National Advisory Committee for Aeronautics, Nov. 10, 1931, Washington, U.S. Government Printing Office, 1931, pp. 17, ills., diagrs., tabls.

— Report No. 394. Airship model tests in the variable density wind tunnel, by Ira H. Abbott.

National Advisory Committee for Aeronautics, Sept. 30, 1931, Washington, U.S. Government Printing Office, 1931, pp. 24, ills., diagrs., tabls.

— Report No. 395. A new principle of sound frequency analysis, by Theodore Theodorsen.

National Advisory Committee for Aeronautics, Oct. 7, 1931, Washington, U.S. Government Printing Office, 1931, pp. 15, ills., diagrs.

— Report No. 396. Hydraulics of fuel injection pumps for compression-ignition engines, by A. M. Rothrock.

National Advisory Committee for Aeronautics, Nov. 28, 1931, Washington, U.S. Government Printing Office, 1931, pp. 48, ills., diagrs., tabls.

— Report No. 397. The drag characteristics of several airships determined by deceleration tests, by F. L. Thompson and H. W. Kirschbaum.

National Advisory Committee for Aeronautics, Oct. 12, 1931, Washington, U.S. Government Printing office, 1931, pp. 15, diagrs., tabls.

— Report No. 398. Investigation of damping liquids for aircraft instruments—II, by M. R. Houseman and G. H. Keulegan.

National Advisory Committee for Aeronautics, Nov. 17, 1931, Washington, U.S. Government Printing Office, 1931, pp. 19, ills., diagrs., tabls.

— Report No. 399. Flame movement and pressure development in an engine cylinder, by Charles F. Marvin, jr., and Robert D. Best.

National Advisory Committee for Aeronautics, Oct. 17, 1931, Washington, U.S. Government Printing Office, 1931, pp. 12, ills., diagrs., tabls.

— Report No. 400. The aerodynamic characteristics of the slotted Clark Y wing as affected by the auxiliary airfoil position, by Carl J. Wenzinger, and Joseph A. Shortal.

National Advisory Committee for Aeronautics, Nov. 21, 1931, Washington, U.S. Government Printing Office, 1931, pp. 16, ills., diagrs., tabls.

— Report No. 401. Combustion in a high-speed compression-ignition engine, by A. M. Rothrock.

National Advisory Committee for Aeronautics, Jan. 16, 1932, Washington, U.S. Government Printing Office, 1931, pp. 17, ills., diagrs.

— Report No. 402. Effect of orifice length-diameter ratio on fuel sprays for compression-ignition engines, by A. G. Gelalles.

National Advisory Committee for Aeronautics, Jan. 20, 1932, Washington, U.S. Government Printing Office, 1931, pp. 14, ills., diagrs., tabl.

— Report No. 403. Ice prevention on aircraft by means of engine exhaust heat and a technical study of heat transmission from a Clark Y airfoil, by Theodore Theodorsen and William C. Clay.

National Advisory Committee for Aeronautics, Feb. 13, 1932, Washington, U.S. Government Printing Office, 1931, pp. 24, ills., diagrs.

— Report No. 404. The effect of increased carburetor pressure on engine performance at several compression ratios, by Oscar W. Schey and Vern G. Rollin.

National Advisory Committee for Aeronautics, Jan. 25, 1932, Washington, U.S. Government Printing Office, 1931, pp. 12, ills., diagrs., tabl.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Report of proceedings of sixth annual Aircraft Engineering Research Conference under the auspices of the National Advisory Committee for Aeronautics, Langley Field, Virginia, May 27, 1930.

[Washington, 1931] (mimeographed), pp. 52, ill.

— Sailing down the Chesapeake Bay.
U.S. Air Services, Vol. 16, No. 7 (July 1931), Washington, pp. 27-28.

— Technical Memorandums No. 600. Resistance of plates and pipes at high Reynolds numbers, by L. Schiller and R. Herman.
National Advisory Committee for Aeronautics, Jan. 8, 1931 (mimeographed), Washington, January 1931, pp. 13, diagrs.
From Ingenieur-Archiv, September 1930.

— Technical Memorandums No. 601. Wrinkling phenomena of thin flat plates subjected to shear stresses, by F. Bollenrath.
National Advisory Committee for Aeronautics, Jan. 19, 1931 (mimeograph), Washington, January 1931, pp. 34, ills., diagrs., tabls.
From Jahrbuch 1930 der Deutschen Versuchsanstalt für Luftfahrt E. V., München-Berlin, 1930.

— Technical Memorandums No. 602. Wrinkling of reinforced plates subjected to shear stresses, by Edgar Seydel.
National Advisory Committee for Aeronautics, Jan. 26, 1931 (mimeographed), Washington, January 1931, pp. 59, diagrs., tabls.
From Jahrbuch 1930 der Deutschen Versuchsanstalt für Luftfahrt E. V., München-Berlin, 1930.

— Technical Memorandums No. 603. Clerget 100 hp heavy-oil engine, by Pierre Léglise.
National Advisory Committee for Aeronautics, Jan. 29, 1931 (mimeographed), Washington, January 1931, pp. 10, ills.
From L'Aéronautique, November 1930.

— Technical Memorandums Nos. 604, 605, 606. Flat sheet metal girder with very thin metal web, by Herbert Wagner. Part I. General theories and assumptions. Part II. Sheet metal girders with spars resistant to bending—oblique uprights—stiffness. Part III. Sheet metal girders with spars resistant to bending—the stress in uprights—diagonal tension fields.
National Advisory Committee for Aeronautics, Feb. 5, 12, 19, 1931 (mimeographed), Washington, February 1931, pp. 38, 38, 39, diagrs.
From Zeitschrift für Flugtechnik und Motorluftschiffahrt, Vol. 20, Nos. 8, 9, 10, 11, 12, April 29, and May 14, 28, June 14, 28, 1929, München-Berlin.

— Technical Memorandums No. 607. The aerodynamic wind vane and the inherent stability of airplanes, by A. Lapresle.
National Advisory Committee for Aeronautics, Feb. 26, 1931 (mimeographed), Washington, February 1931, pp. 16, ills., diagrs.
From Bulletin Technique of the Services Technique de l'Aéronautique, No. 66, February 1930.

— Technical Memorandums No. 608. The use of elektron metal in airplane construction, by E. I. de Ridder.
National Advisory Committee for Aeronautics, Feb. 28, 1931 (mimeographed), Washington, February 1931, pp. 22, ills., tabls.
From Jahrbuch 1929 der Wissenschaftlichen Gesellschaft für Luftfahrt.

— Technical Memorandums No. 609. The production of turbulence, by W. Tollmien.
National Advisory Committee for Aeronautics, March 5, 1931 (mimeographed), Washington, March 1931, pp. 32, diagrs.
Aus den Nachrichten der Gesellschaft der Wissenschaften zu Göttingen, Mathematisch-Physikalische Klasse, 1929.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Technical Memorandums No. 610. Optico-photographic measurements of airplane deformations, by Hans Georg Küssner.

National Advisory Committee for Aeronautics, March 12, 1931 (mimeographed), Washington, March 1931, pp. 16, ills., diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 21, No. 17, Sept. 15, 1930.

— Technical Memorandums No. 611. Mechanical similitude and turbulence, by Th. v. Karman.

National Advisory Committee for Aeronautics, March 19, 1931 (mimeographed), Washington, March 1931, pp. 19, diagrs.

From *Nachrichten von der Gesellschaft der Wissenschaften zu Göttingen*, 1930.

— Technical Memorandums No. 612. Static longitudinal stability of "Ente" airplanes, by Heinrich Georg Kiel.

National Advisory Committee for Aeronautics, March 26, 1931, (mimeographed) Washington, March 1931, pp. 27, diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, December 15, 1930.

— Technical Memorandums No. 613. Elmira soaring contest, 1930, by Wolfram K. E. Hirth, Martin H. Schempp, and Jack Herrick.

National Advisory Committee for Aeronautics, March 31, 1931 (mimeographed), Washington, March 1931, pp. 15, tabls., maps.

Prepared originally for and at the request of the National Glider Association.

— Technical Memorandums No. 614. The transference of heat from a hot plate to an air stream, by Franz Éliás.

National Advisory Committee for Aeronautics, April 2, 1931 (mimeographed), Washington, April 1931, pp. 25, ills., diagrs.

From *Abhandlungen aus dem Aerodynamischen Institut an der Technischen Hochschule Aachen*, No. 9, 1930.

— Technical Memorandums No. 615. A study of curvilinear flight, by Helmut Kruse.

National Advisory Committee for Aeronautics, April 9, 1931 (mimeographed), Washington, April 1931, pp. 22 ills., diagrs., tabls.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, January 28, 1931, Vol. 22, No. 2, München und Berlin.

— Technical Memorandums No. 616. Aeronautical education and research, at the Swiss Institute of Technology in Zurich, by L. Karner and J. Ackeret.

National Advisory Committee for Aeronautics, April 16, 1931 (mimeographed) Washington, April 1931, pp. 8, ills.

Aero-Revue, November 15, 1930.

— Technical Memorandums No. 617. Investigation of certain wing shapes with sections varying progressively along the span, by L. Arsandaux.

National Advisory Committee for Aeronautics, April 23, 1931 (mimeographed), Washington, April 1931, pp. 44, diagrs.

Aéronautique, March, April, and May 1928.

— Technical Memorandums No. 618. Relative economy of different methods of airplane construction, by H. Herrmann.

National Advisory Committee for Aeronautics, April 30, 1931 (mimeographed), Washington, April 1931, pp. 43, ills., diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Nov. 14 and 28, 1930, München und Berlin.

— Technical Memorandums No. 619. Determination of resistance and trimming moment of planing water craft, by P. Schröder.

National Advisory Committee for Aeronautics, May 7, 1931 (mimeographed), Washington, May 1931, pp. 8, diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Nov. 28, 1930, München und Berlin.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Technical Memorandums No. 620. Combined pitching and yawing motion of airplanes, by A. v. Baranoff and L. Hopf.
 National Advisory Committee for Aeronautics, May 14, 1931 (mimeographed), Washington, May 1931, pp. 29, diagrs.
 From *Luftfahrtforschung*, Vol. 3, No. 2, March 20, 1929, München und Berlin.

— Technical Memorandums No. 621. The take-off of seaplanes, based on a new hydrodynamic reduction theory, by Paul Schröder.
 National Advisory Committee for Aeronautics, May 21, 1931 (mimeographed), Washington, May 1930, pp. 8, diagrs.
 From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 1, Jan. 14, 1931, München und Berlin.

— Technical Memorandums No. 622. Landing of seaplanes, by Herbert Wagner.
 National Advisory Committee for Aeronautics, May 28, 1931 (mimeographed), Washington, May 1931, pp. 15, diagrs.
 From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 1, Jan. 14, 1931, München und Berlin.

— Technical Memorandums No. 623. Eleventh Rhön soaring-flight contest, 1930, by Walter Georgii.
 National Advisory Committee for Aeronautics, June 4, 1931 (mimeographed), Washington, June 1931, pp. 16, diagrs., maps, tabls.
 From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 5, March 14, 1931, München und Berlin.

— Technical Memorandums No. 624. Landing impact of seaplanes, by Wilhelm Pabst.
 National Advisory Committee for Aeronautics, June 11, 1931 (mimeographed), Washington, June 1931, pp. 29, ills., diagrs., tabls.
 From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Jan. 14, 1931, Vol. 22, No. 1.

— Technical Memorandums No. 625. Effect of stabilizing forces of turbulence, by L. Prandtl.
 National Advisory Committee for Aeronautics, June 18, 1931 (mimeographed), Washington, June 1931, pp. 11, diagrs.
 Sonderdruck aus *Vorträge aus dem Gebiete der Aerodynamik und verwandter Gebiete*, Aachen, 1929.

— Technical Memorandums No. 626. The frictionless flow in the region around two circles, by M. Lagally.
 National Advisory Committee for Aeronautics, June 25, 1931 (mimeographed), Washington, June 1931, pp. 11, diagrs.
 From *Zeitschrift für angewandte Mathematik und Mechanik*, Vol. 9, No. 4, Aug. 1929.

— Technical Memorandums No. 627. Airplane landing gear, by Salvatore Maiorca.
 National Advisory Committee for Aeronautics, July 2, 1931 (mimeographed), Washington, July 1931, pp. 23, ills., diagrs., tabls.
 From *L'Aerotecnica*, Vol. 10, Nos. 9 and 10, Sept.-Oct. 1930.

— Technical Memorandums No. 628. Fire prevention on aircraft, by Fritz Kühn.
 National Advisory Committee for Aeronautics, July 9, 1931 (mimeographed), Washington, July 1931, pp. 23, ills., tabls.
 From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, Nos. 7 and 8, April 14 and 28, 1931, München und Berlin.

— Technical Memorandums No. 629. The dangerous flat spin and the factors affecting it, by Richard Fuchs and Wilhelm Schmidt.
 National Advisory Committee for Aeronautics, July 16, 1931 (mimeographed), Washington, July 1931, pp. 39, ills., diagrs.
 From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 21, Nos. 13 and 14, July 14 and 28, 1930, München und Berlin.

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NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Technical Memorandums No. 630. The steady spin, by Richard Fuchs and Wilhelm Schmidt.
National Advisory Committee for Aeronautics, July 23, 1931 (mimeographed), Washington, July 1931, pp. 27, ills., diagrs.
From *Luftfahrtforschung*, Vol. 3, No. 1, Feb. 27, 1929, München und Berlin.

— Technical Memorandums No. 631. Superchargers, by Pierre Léglise.
National Advisory Committee for Aeronautics, July 31, 1931 (mimeographed), Washington, July 1931, pp. 26, ills., diagrs., tabls.
From *L'Aéronautique*, March and April 1931.

— Technical Memorandums No. 632. Downwash measurements behind wings with detached flow, by E. Petersohn.
National Advisory Committee for Aeronautics, Aug. 6, 1931 (mimeographed), Washington, August 1931, pp. 6, ills., diagrs.
From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 10, No. 22, May 28, 1931, München und Berlin.

— Technical Memorandums No. 633. Effect of viscosity in speed measurements with double-throat venturi tubes, by H. Peters.
National Advisory Committee for Aeronautics, Aug. 13, 1931 (mimeographed), Washington, August 1931, pp. 5, diagrs.
From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 11, June 15, 1931, München und Berlin.

— Technical Memorandums No. 634. Experiments with a wing from which the boundary layer is removed by suction, by Oskar Schrenk.
National Advisory Committee for Aeronautics, Aug. 20, 1931 (mimeographed), Washington, August 1931, pp. 12, diagrs.
From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 9, May 15, 1931, München und Berlin.

— Technical Memorandums No. 635. The use of slots for increasing the lift of airplane wings, by Fr. Haus.
National Advisory Committee for Aeronautics, Aug. 27, 1931 (mimeographed), Washington, August 1931, pp. 15, diagrs.
From *L'Aéronautique*, June 1931.

— Technical Memorandums No. 636. Experiments with airplane brakes, by Franz Michael.
National Advisory Committee for Aeronautics, Sept. 3, 1931 (mimeographed), Washington, September 1931, pp. 28, ills., diagrs., tabls.
From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, Nos. 10 and 11, May 28, and June 15, 1931, München und Berlin.

— Technical Memorandums No. 637. The development, design and construction of gliders and sailplanes, by A. Lippisch.
National Advisory Committee for Aeronautics, Sept. 12, 1931 (mimeographed), Washington, September 1931, pp. 38, ills., diagrs.
From *The Journal of the Royal Aeronautical Society*, July 1931.

— Technical Memorandums No. 638. The dangerous sideslip of a stalled airplane and its prevention, by Richard Fuchs and Wilhelm Schmidt.
National Advisory Committee for Aeronautics, Sept. 17, 1931 (mimeographed), Washington, September 1931, pp. 16, diagrs.
From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 13, July 14, 1931, München und Berlin.

— Technical Memorandums No. 639. On floats and float tests, by Friederich Seewald.
National Advisory Committee for Aeronautics, Sept. 24, 1931 (mimeographed), Washington, September 1931, pp. 25, diagrs.
From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 9, May 15, 1931, München und Berlin.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Technical Memorandums No. 640. The new "Charlestop" remote brake transmission and control, by Pierre Léglise.

National Advisory Committee for Aeronautics, Oct. 1, 1931 (mimeographed), Washington, October 1931, pp. 3, ills.

From *L'Aéronautique*, No. 146, July 1931.

— Technical Memorandums No. 641. Lift distribution and longitudinal stability, by Carl Töpfer.

National Advisory Committee for Aeronautics, Oct. 8, 1931 (mimeographed), Washington, October 1931, pp. 7, diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 12, June 29, 1931, München und Berlin.

— Technical Memorandums No. 642. Flutter in propeller blades, by Friedrich Seewald.

National Advisory Committee for Aeronautics, Oct. 15, 1931 (mimeographed), October 1931, pp. 15, diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 12, June 29, 1931, München und Berlin.

— Technical Memorandums No. 643. Load assumptions for the landing impact of seaplanes, by Josef Taub.

National Advisory Committee for Aeronautics, Oct. 22, 1931 (mimeographed), Washington, October 1931, pp. 29, diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 14, July 28, 1931, München und Berlin.

— Technical Memorandums No. 644. On atomization in carburetors, by F. N. Scheubel.

National Advisory Committee for Aeronautics, Nov. 29, 1931 (mimeographed), Washington, October 1931, pp. 10, ills., diagrs.

From *Jahrbuch der Wissenschaftlichen Gesellschaft für Luftfahrt*, 1927.

— Technical Memorandums No. 645. Relations between ship design and seaplane design, by Georg Schnadel.

National Advisory Committee for Aeronautics, Nov. 5, 1931 (mimeographed), Washington, November 1931, pp. 10, diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 15, August 14, 1931, München und Berlin.

— Technical Memorandums No. 646. Measurement of visibility from the pilot's cockpit on different airplane types, by Gerhard Kurz.

National Advisory Committee for Aeronautics, Nov. 12, 1931 (mimeographed), Washington, November 1931, pp. 17, ills., diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 6, March 28, 1931, München und Berlin.

— Technical Memorandums No. 647. Spatial buckling of various types of airplane strut systems, by Alfred Teichmann.

National Advisory Committee for Aeronautics, Nov. 19, 1931 (mimeographed), Washington, November 1931, pp. 8, tabs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 17, Sept. 14, 1931, München und Berlin.

— Technical Memorandums No. 648. Measurements of vertical air currents in the atmosphere, by K. O. Lange.

National Advisory Committee for Aeronautics, Nov. 25, 1931 (mimeographed), Washington, November 1931, pp. 9, ills., diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 17, Sept. 14, 1931, München und Berlin.

— Technical Memorandums No. 649. Liquid cooling of aircraft engines, by Hanns Weidinger.

National Advisory Committee for Aeronautics, Dec. 3, 1931 (mimeographed), Washington, December 1931, pp. 11, ills., diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 18, Sept. 28, 1931, München und Berlin.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Technical Memorandums No. 650. Development of a non-autorotative airplane capable of steep landing, by Wilhelm Schmidt.

National Advisory Committee for Aeronautics, Dec. 10, 1931 (mimeographed), Washington, December 1931, pp. 26, ills., diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, Nos. 18, 19, Sept. 28, and Oct. 14, 1931, München und Berlin.

— Technical Memorandums No. 651. Wind tunnel of the Bucharest Polytechnic Institute.

National Advisory Committee for Aeronautics, Dec. 17, 1931 (mimeographed), Washington, December 1931, pp. 2, ills.

— Technical Memorandums No. 652. Goldstein's solution of the problem of the aircraft propeller with a finite number of blades, by H. B. Helmbold.

National Advisory Committee for Aeronautics, Dec. 23, 1931 (mimeographed), Washington, December 1931, pp. 7, diagrs.

From *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vol. 22, No. 14, July 28, 1931.

— Technical Notes No. 360. The pressure distribution over a square wing tip on a biplane in flight, by Richard V. Rhode and Eugene E. Lundquist.

National Advisory Committee for Aeronautics, Jan. 13, 1931 (mimeographed), Washington, January 1931, pp. 22, diagrs., tabls.

— Technical Notes No. 361. The effect of small variations in profile of airfoils, by Kenneth E. Ward.

National Advisory Committee for Aeronautics, Jan. 20, 1931 (mimeographed), Washington, January 1931, pp. 9, diagrs., tabl.

— Technical Notes No. 362. Lift and drag characteristics of a cabin monoplane determined in flight, by F. L. Thompson and P. H. Keister.

National Advisory Committee for Aeronautics, Jan. 27, 1931 (mimeographed), Washington, January 1931, pp. 11, ills., diagrs., tabls.

— Technical Notes No. 363. The behavior of conventional airplanes in situations thought to lead to most crashes, by Fred E. Weick.

National Advisory Committee for Aeronautics, Feb. 3, 1931 (mimeographed), Washington, February 1931, pp. 13, ill., diagrs.

— Technical Notes No. 364. Tests in the variable density wind tunnel to investigate the effects of scale and turbulence on airfoil characteristics, by John Stack.

National Advisory Committee for Aeronautics, Feb. 10, 1931 (mimeographed), Washington, February 1931, pp. 15, ill., diagrs.

— Technical Notes No. 365. Interference effects and drag of struts on a monoplane wing, by Kenneth E. Ward.

National Advisory Committee for Aeronautics, Feb. 17, 1931 (mimeographed), Washington, February 1931, pp. 12, ills., diagrs., tabls.

— Technical Notes No. 366. Torsion in box wings, by John B. Wheatley.

National Advisory Committee for Aeronautics, Feb. 24, 1931 (mimeographed), Washington, February 1931, pp. 44, diagrs.

— Technical Notes No. 367. The aerodynamic characteristics of three tapered airfoils tested in the variable density wind tunnel, by Raymond F. Anderson.

National Advisory Committee for Aeronautics, Feb. 28, 1931 (mimeographed), Washington, February 1931, pp. 12, ill., diagrs., tabls.

— Technical Notes No. 368. The variation in pressure in the cabin of an airplane in flight, by Melvin N. Gough.

National Advisory Committee for Aeronautics, March 24, 1931 (mimeographed), Washington, March 1931, pp. 6, ills., diagrs.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Technical Notes No. 369. Effect of orifice length-diameter ratio on the coefficient of discharge of fuel-injection nozzles, by A. G. Galles and E. T. Marsh. National Advisory Committee for Aeronautics, March 31, 1931 (mimeographed), Washington, March 1931, pp. 15, diagrs., tabl.

— Technical Notes No. 370. Strength tests on paper cylinders in compression, bending, and shear, by Richard V. Rhode and Eugene E. Lundquist. National Advisory Committee for Aeronautics, April 7, 1931 (mimeographed), Washington, April 1931, pp. 14, ills., diagrs., tabls.

— Technical Notes No. 371. Experiments with an airfoil model on which the boundary layer is controlled without the use of supplementary equipment, by I. H. Abbott. National Advisory Committee for Aeronautics, April 14, 1931 (mimeographed), Washington, April 1931, pp. 6, ill., diagrs.

— Technical Notes No. 372. Development of an impinging-jet fuel-injection valve nozzle, by J. A. Spanogle and G. T. Hemmeter. National Advisory Committee for Aeronautics, April 21, 1931 (mimeographed), Washington, April 1931, pp. 9, ills., diagrs.

— Technical Notes No. 373. Investigation of the discharge rate of a fuel-injection system, by Harold C. Gerrish and Fred Voss. National Advisory Committee for Aeronautics, April 25, 1931 (mimeographed), Washington, April 1931, pp. 11, ills., diagrs., tabl.

— Technical Notes No. 374. Preliminary study of applied load factors in bumpy air, by Richard V. Rhode and Eugene E. Lundquist. National Advisory Committee for Aeronautics, April 30, 1931 (mimeographed), Washington, April 1931, pp. 30, diagrs., tabls.

— Technical Notes No. 375. Moments of inertia of several airplanes, by Marvel P. Miller and Hartley A. Soulé. National Advisory Committee for Aeronautics, May 5, 1931 (mimeographed), Washington, May 1931, pp. 6, diagr., tabls.

— Technical Notes No. 376. Effect of high air velocities on the distribution and penetration of a fuel spray, by A. M. Rothrock. National Advisory Committee for Aeronautics, May 9, 1931 (mimeographed), Washington, May 1931, pp. 10, ills., diagrs.

— Technical Notes No. 377. An integrating manometer for use in wind tunnel pressure distribution measurements, by Richard W. Noyes. National Advisory Committee for Aeronautics, May 12, 1931 (mimeographed), Washington, May 1931, pp. 6, ills., tabl.

— Technical Notes No. 378. Comparison of weights of 17ST and steel tubular structural members used in aircraft construction, by E. C. Hartmann. National Advisory Committee for Aeronautics, May 19, 1931 (mimeographed), Washington, May 1931, pp. 17, diagrs.

— Technical Notes No. 379. The pressure distribution over a semicircular wing tip on a biplane in flight, by Richard V. Rhode and Eugene E. Lundquist. National Advisory Committee for Aeronautics, May 26, 1931 (mimeographed), Washington, May 1931, pp. 14, diagrs., tabls.

— Technical Notes No. 380. A suggested method for measuring turbulence, by C. Fayette Taylor. National Advisory Committee for Aeronautics, June 22, 1931 (mimeographed), Washington, June 1931, pp. 7, diagrs.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Technical Notes No. 381. Endurance and other properties at low temperatures of some alloys for aircraft use, by H. W. Russell and W. A. Welcker, jr.

National Advisory Committee for Aeronautics, June 12, 1931 (mimeographed), Washington, June 1931, pp. 16, ills., diagrs., tabs.

- Technical Notes No. 382. Basic requirements of fuel-injection nozzles for quiescent combustion chambers, by J. A. Spanogle and H. H. Foster.
National Advisory Committee for Aeronautics, June 23, 1931 (mimeographed), Washington, June 1931, pp. 6, diagrs.
- Technical Notes No. 383. Metal-truss wing spars, by Andrew E. Swickard.
National Advisory Committee for Aeronautics, July 24, 1931 (mimeographed), Washington, July 1931, pp. 31, diagrs., tabs.
- Technical Notes No. 384. The effect of injection-valve opening pressure on spray-tip penetration, by A. M. Rothrock and E. T. Marsh.
National Advisory Committee for Aeronautics, July 27, 1931 (mimeographed), Washington, July 1931, pp. 4, diagrs.
- Technical Notes No. 385. Tests of six symmetrical airfoils in the variable density wind tunnel, by Eastman N. Jacobs.
National Advisory Committee for Aeronautics, July 31, 1931 (mimeographed), Washington, July 1931, pp. 18, ill., diagrs., tabl.
- Technical Notes No. 386. Effect of nose shape on the characteristics of symmetrical airfoils, by Robert M. Pinkerton.
National Advisory Committee for Aeronautics, Aug. 14, 1931 (mimeographed), Washington, August 1931, pp. 16, diagrs., tabs.
- Technical Notes No. 387. The pressure distribution over a modified elliptical wing tip on a biplane in flight, by Richard V. Rhode and Eugene E. Lundquist.
National Advisory Committee for Aeronautics, Aug. 28, 1931 (mimeographed), Washington, August 1931, pp. 14, diagrs., tabs.
- Technical Notes No. 388. A comparison of the aerodynamic characteristics of three normal and three reflexed airfoils in the variable density wind tunnel, by George L. Defoe.
National Advisory Committee for Aeronautics, Aug. 31, 1931 (mimeographed), Washington, August 1931, pp. 12, ills., tabs.
- Technical Notes No. 389. The N.A.C.A. apparatus for studying the formation and combustion of fuel sprays and the results from preliminary tests, by A. M. Rothrock.
National Advisory Committee for Aeronautics, Sept. 2, 1931 (mimeographed), Washington, September 1931, pp. 22, ills., diagrs., tabs.
- Technical Notes No. 390. A method for reducing the temperature of exhaust manifolds, by Oscar W. Schey and Alfred W. Young.
National Advisory Committee for Aeronautics, Sept. 8, 1931 (mimeographed), Washington, September 1931, pp. 9, ills., diagr., tabl.
- Technical Notes No. 391. Tests of N.A.C.A. airfoils in the variable-density wind tunnel. Series 43 and 63, by Eastman N. Jacobs and Robert M. Pinkerton.
National Advisory Committee for Aeronautics, Sept. 15, 1931 (mimeographed), Washington, September 1931, pp. 32, diagrs., tabs.
- Technical Notes No. 392. Tests of N.A.C.A. airfoils in the variable-density wind tunnel. Series 45 and 65, by Eastman N. Jacobs and Robert M. Pinkerton.
National Advisory Committee for Aeronautics, Sept. 22, 1931 (mimeographed), Washington, September 1931, pp. 30, diagrs., tabs.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Technical Notes No. 393. An investigation of cotton for parachute cloth, by Wm. D. Appel and R. K. Worner.

National Advisory Committee for Aeronautics, Sept. 29, 1931 (mimeographed), Washington, September 1931, pp. 21, tabs.

— Technical Notes No. 394. The prevention of ice formation on gasoline tank vents, by Theodore Theodorsen and William C. Clay.

National Advisory Committee for Aeronautics, Oct. 6, 1931 (mimeographed), Washington, October 1931, pp. 7, ills., diagrs., tabs.

— Technical Notes No. 395. Penetration and duration of fuel sprays from a pump injection system, by A. M. Rothrock and E. T. Marsh.

National Advisory Committee for Aeronautics, Oct. 20, 1931 (mimeographed), Washington, October 1931, pp. 16, ills., diagrs.

— Technical Notes No. 396. Performance of a compression-ignition engine with a precombustion chamber having high-velocity air flow, by J. A. Spanogle and C. S. Moore.

National Advisory Committee for Aeronautics, Nov. 14, 1931 (mimeographed), Washington, October 1931, pp. 15, ills., diagrs.

— Technical Notes No. 397. The aerodynamic characteristics of six commonly used airfoils over a large range of positive and negative angles of attack, by Raymond F. Anderson.

National Advisory Committee for Aeronautics, Nov. 3, 1931 (mimeographed), Washington, November 1931, pp. 5, diagrs., tabl.

— Technical Notes No. 398. The effect of slots and flaps on the lift and drag of the McDonnell airplane as determined in flight, by Hartley A. Soulé.

National Advisory Committee for Aeronautics, Nov. 10, 1931 (mimeographed), Washington, November 1931, pp. 12, ills., diagrs., tabs.

— Technical Notes No. 399. Some characteristics of fuel sprays at low-injection pressures, by A. M. Rothrock and C. D. Waldon.

National Advisory Committee for Aeronautics, Nov. 17, 1931 (mimeographed), Washington, November 1931, pp. 6, ills., diagrs.

— Technical Notes No. 400. Advantages of oxide films as bases for aluminum pigmented surface coating for aluminum alloys, by R. W. Buzzard and W. H. Mutchler.

National Advisory Committee for Aeronautics, Nov. 24, 1931 (mimeographed), Washington, November 1931, pp. 16, ills., diagrs.

— Technical Notes No. 401. Tests of N.A.C.A. airfoils in the variable density wind tunnel. Series 44 and 64, by Eastman N. Jacobs and Robert M. Pinkerton.

National Advisory Committee for Aeronautics, Dec. 1, 1931 (mimeographed), Washington, December 1931, pp. 31, diagrs., tabs.

— Technical Notes No. 402. The effectiveness of a double-stem injection valve in controlling combustion in a compression-ignition engine, by J. A. Spanogle and E. G. Whitney.

National Advisory Committee for Aeronautics, Dec. 15, 1931 (mimeographed), Washington, December 1931, pp. 19, diagrs.

— Technical Notes No. 403. The interference effects on an airfoil of a flat plate at mid-span position, by Kenneth E. Ward.

National Advisory Committee for Aeronautics, Dec. 22, 1931 (mimeographed), Washington, December 1931, pp. 16, ills., diagrs., tabs.

— Il tunnel aerodinamico per ricerche sui propulsori del Comitato Nazionale Consultivo per l'Aeronautica (N.A.C.A.).

Riv. Aer., Anno 7, N. 2 (feb. 1931). Roma, pp. 331-343, ills., diagrs.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. *See Ames, Joseph Sweetman: Glancing back at 1930. Scientific progress.*

- *See Klemin, Alexander: Recent aircraft engineering research.*
- *See Schey, Oscar William: Superchargers and supercharging. A summary of the data obtained during an important series of experiments carried out by the N.A.C.A.*
- *See Tichenor, Frank A.: Air—hot and otherwise. The N.A.C.A. counters.*

NATIONAL AIR RACES. Complete and official results of the 1931 National Air Races.

Western Flying, Vol. 10, No. 4 (Oct. 1931), Los Angeles, Calif., pp. 18-19, ports.

- Complete list of events at the National Air Races.
Aero Digest, Vol. 19, No. 3 (Sept. 1931), New York, pp. 36-37, 102.
- National Air Race results.
Aero Digest, Vol. 19, No. 4 (Oct. 1931), New York, pp. 38-39, 112, illus.
- National Air Races.
Aero Digest, Vol. 19, No. 3 (Sept. 1931), New York, pp. 35, 116.
- National Air Races at Cleveland this month.
U.S. Air Services, Vol. 16, No. 8 (Aug. 1931), Washington, pp. 38-39.
- National race program.
Airway Age, Vol. 13, No. 5 (Aug. 1, 1931), New York, pp. 122-125.
- The 1931 air races.
Airway Age, Vol. 13, No. 10 (Sept. 5, 1931), New York, pp. 192, 198.
- \$100,000 in prizes.
Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Calif., p. 39.
- Setting the stage for the races.
Aviation, Vol. 30, No. 9 (Sept. 1931), New York, pp. 516-517, illus.
- 236 M.P.H.
Western Flying, Vol. 10, No. 4 (Oct. 1931), Los Angeles, Calif., pp. 14-19, illus., ports.
- The U.S. National Air Races.
Aeroplane, Vol. 41, No. 14 (Sept. 30, 1931), London, pp. 822-824.
- World aviation passes in review at 1931 National air races.
Nat. Aer. Mag., Vol. 9, No. 9 (Sept. 1931), Washington, pp. 24-29, illus.
- *See Cleveland: Die grossen amerikanischen Luftspiele in Cleveland. "National air Races."*
- *See Cleveland: National Races go to Cleveland.*
- *See Mockler, Don: The National Air Races for 1931.*
- *See Murphy, Pat: Grandstand observations at the air races.*
- *See Tichenor, Frank A.: Air—hot and otherwise.*

NATIONAL AIR TRANSPORT. N.A.T.—Ford wing mail compartments.
Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, p. 94, ill.

NATIONAL AIRCRAFT SHOW. National Aircraft Show. Detroit city airport, Detroit, Michigan, April 11 to 19, 1931.

Aero Digest, Vol. 18, No. 4 (April 1931), New York, pp. 39-41, illus.

NATIONAL BOARD OF FIRE UNDERWRITERS. *See* Blee, Harry H.: *Protección de hangeres de aeroplanos.* Resumen del informe del comite de investigaciones sobre el control de hangeres para aeroplanos por applicación automatica del agua.

NATIONAL CONFERENCE ON UNIFORM AERONAUTIC REGULATORY LAWS. Proceedings of the National Conference on Uniform Aeronautic Regulatory Laws, December 16 and 17, 1930, Washington, D.C.

Washington, U.S. Government Printing Office, 1931, pp. 126. United States Department of Commerce, Aeronautics Branch. Two editions; second edition revised.

NATIONAL FOREIGN TRADE COUNCIL. Our air mail service with Lation America. New York, The National Foreign Trade Council, 1931, pp. 32, map, tabls. Fact Finding Pamphlets in Foreign Trade, No. 10.

NATIONAL GUARD. *See* Everson, William G.: Our National Guard Air Corps.

NATIONAL PHYSICAL LABORATORY. National Physical Laboratory. Aerodynamics Department. Wind tunnel design. Fluid motion. *Engineering*, Vol. 132, No. 3420 (July 31, 1931), London, pp. 142-143, ill.

— The National Physical Laboratory. Racing seaplanes and new aircraft. Airscrews. Thrust integrating tubes. *Engineering*, Vol. 132, No. 3422 (Aug. 14, 1931), London, pp. 209-210, diagrs.

— Report for the year 1930. London, Published by His Majesty's Stationery Office for the Department of Scientific and Industrial Research, 1931, pp. 295, ills., diagrs. For the Research Department and the aeronautical Research Committee, pp. 197-209. Report on the Aerodynamics Department: Apparatus and equipment, pp. 220-226: Aerodynamic researches, pp. 227-248.

— *See* Lock, C. N. H., and A. R. Collar: Exploration of the flow near the screw proposed for the N.P.L. compressed air tunnel.

— *See* R. 101: Cause of the loss of R. 101. Conclusions of the Court and a summary of investigations made at the National Physical Laboratory. Experiments and calculations carried out at the National Physical Laboratory (Prepared by Professor C. E. Inglis).

NAUTILUS. *See* Derstroff, Hanns: *Die polarfahrt des "Graf Zeppelin."* "SOS Nautilus" kein "Stop Zeppelin."

— *See* Kohrs, W.: *Nautilus und Zeppelin.*

NAVARRO. The Navarro "Chief." A low-powered three-engined monoplane three-seater. *Flight*, No. 1158, Vol. 23, No. 10 (March 6, 1931), London, 198-200, ills.

NAVIGATION. *See* Barbieri, Fortunato: *Navigazione aerea; corso allievi piloti—anno 1931.*

— *See* Block, Walter: *Die Prüfung von Objektiven auf Verzeichnungsfehler.*

— *See* Connor, Harry P.: *Crossing the North Atlantic.*

— *See* Dreisonstok, Joseph Young: *Navigation tables for mariners and aviators.*

— *See* Dreisonstok, Joseph Young: *Rapid air navigation.*

— *See* Everitt, P. F.: *Tables for use in aero navigation by astronomical methods.*

NAVIGATION. *See* Fauvel, Ch.: *La navirègle*.

- *See* Gingrich, John Edward: *Aerial and marine navigation tables*.
- *See* Hawks, Frank: *Navigation à la slide rule*.
- *See* Holland, Harvey Hodges: *Avigation*.
- *See* Ide, John Jay: *The Loth system of navigation by rotating radio beacons*.
- *See* Jones, Bradley: *Avigation*.
- *See* Lacmann, Otto: *Entzerrungsgerat für nicht ebenes Gelände*.
- *See* Potter, Leslie S.: *Navigation in ground schools*.
- *See* Potter, Leslie S.: *The navigation of the air and meteorology*.
- *See* Radio: *Jämförelse mellan olika system för navigation av flygplan medelst radio*.
- *See* Severino, Giuseppe: *Sulle determinazioni di posizione con una sola osservazione d'altezza*.
- *See* Stewart, C. J.: *Determination of position in high latitudes, with particular reference to aircraft observation*.
- *See* Swoffer, Frank Arthur: *Air navigation for the private owner; a course of elementary aerial navigation*.
- *See* Tenani, M.: *Un nuovo tipo di sestante per aeronautica*.
- *See* Trojani, F.: *Aviazione; lezioni tenute agli allievi piloti di aeroplano 1931*.
- *See* United States Department of Commerce. Aeronautics Branch: *Air navigation maps*. July 1, 1931.
- *See* United States Department of Commerce. Aeronautics Branch: *List of air navigation charts*. October 15, 1929.
- *See* United States Hydrographic Office: *Position tables for aerial and surface navigation*.
- *See* Weems, Philip Van Horn: *Air navigation*.

NAVIRÈGLE. *See* Fauvel, Ch.: *La navirègle*.

NAVY. *See* Army-Navy: A N standards conference.

NAYLER, J. L., and E. OWER. *Aviation of to-day; its history and development; with a chapter on aircraft engines by W. J. Stern*.

Wayside and Woodland Series, New York, Frederick Warner & Co., 1931, pp. 510, illus.

N B TRAINER. *See* Whitaker, Jack: *Demonstration flights of the new N B trainer*.

NEBESAR, ROBERT J. *Supercharging the aeroplane engine and increasing speed with altitude*.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1200, Vo. 23, No. 52 (Dec. 25, 1931), London, pp. 1264a-1264e (89-93), diagrs., tabs.

NEERLANDIA. *Ballonvaart "Neerlandia" op 17 November 1930*.

Het Vliegveld, 15 de Jaarg., No. 1 (Jan. 1931), Amsterdam, p. 10.

NETHERLANDS. Opgave van in Nederland ingeschreven vliegtuigen. Department van Waterstaat. Luchtvaartdienst.

Het Vliegveld, 15 de Jaarg., No. 11 (Nov. 1931), Amsterdam, pp. 390-391.

— See Austria: Oesterreich. Vertrag zwischen der Republik Oesterreich und dem Königreich der Niederlande über den Luftverkehr.

— See Franquinet, E.: Is binnenlandsch luchtverkeer in Nederland in de naaste toekomst mogelijk?

— See Congrès International de la Navigation Aérienne; Cinquième Congrès International de la Navigation Aérienne. Organisé sous les auspices du Gouvernement Néerlandais par l'Aéro-Club Royal des Pays-Bas. La Haye, 1-6, Septembre 1930.

— See Snijders, C. J.: Nederland's plaats in het wereldluchtverkeer.

NEUE AUGSBURGER ZEITUNG. Professor Piccards forschungsflug in die stratosphäre; verlauf des stratosphärenfluges und dessen wissenschaftliches ergebnis. Mit Beiträgen von Professor Dr. A. Piccard, ingenieur P. Kipfer und anderen sachverständigen, hrsg. von der Neuen Augsburger Zeitung.

Augsburg, Literar. Institut von Haas & Grabber, 1931, pp. 128, ills.

NEUMARK, STEFAN. Badanie wolnego spadku z uwzględnieniem oporu powietrza o zmiennej gęstości.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 5 (Nr. 20), Warszawa, 1921, pp. 5-22, ill., diagrs., tabls.

— Badanie wolnego spadku z uwzględnieniem oporu powietrza o zmiennej gęstości.

1931, pp. 19. Odbitka ze sprawozdania kwartalnego Nr. 5 Instytutu Dobań technicznych Lotnictwa, 1931.

— Dalsze uwagi o hamowaniu kół lądującego samolotu. (Remarques supplémentaires sur le freinage des roues de l'avion pendant l'atterrissage).

Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 7, Nr. 35, Warszawa, 1931, pp. 23-24.

— Hamowanie kół lądującego samolotu. (Le freinage des roues de l'avion pendant l'atterrissage).

Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 6 (Nr. 27), Warszawa, 1931, pp. 15-32, ills., diagrs.

— Les profils d'aviation à centre de poussée fixe.

Prace Instytutu Aerodynamicznego w Warszawie prowadzone pod kierunkiem prof. C. Witoszynskiego, Zeszyt III, Warszawa, 1930, pp. 1-69, ills., diagrs., tabls.

— Sur les formes diverses du potentiel servant à calculer les forces qui agissent sur les profils d'aviation.

Prace Instytutu Aerodynamicznego w Warszawie, Zeszyt I, Warszawa, 1927, pp. 37-84, ills., diagrs., tabls.

NEVILL, JOHN T. The national aircraft show of 1931.

Aviation, Vol. 30, No. 4 (April 1931), New York, pp. 210-212, ill.

NEW GUINEA. See Brandes, E. W.: Prospecting by air over Papuan jungles.

NEW YORK. Municipal airport at New York.

Airway Age, Vol. 12, No. 10 (June 6, 1931), New York, pp. 581-582, ills.

— New York City dedicates its airport.

Aviation, Vol. 30, No. 6 (June 1931), New York, pp. 342-343, ills.

NEW YORK. Report of the fact-finding committee on suitable airport facilities for the New York metropolitan district.
New York, 1927, pp. 10, maps.

— *See* Allen, C. B.: Aerial police of New York City.

NEW YORK STATE. Laws affecting aviation of the State of New York. Published by the New York State Commission on Aviation.
Albany, N.Y., J. B. Lyon Company, printers, 1931, pp. 21.

— *See* Roth, B.: Air branch of New York state police.

NEW YORK UNIVERSITY. Technical notes of the Daniel Guggenheim School of Aeronautics, College of Engineering, New York University, No. 1—
New York, 1931, ills., diagrs.

NEWCOMB, J. ARTHUR. Transatlantic flights, 1931.

U.S. Air Services, Vol. 16, No. 11 (Nov. 1931), Washington, D.C., pp. 29-30.

NEWELL, JOSEPH S. Structural design progress in 1930.

Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 48-49, ill.

NEWSPAPER WORK. *See* Piersol, James V.: Adapting the airplane to the newspaper. A report covering an experiment conducted by the Detroit News.

NEWTON, BYRON R. One of the greatest achievements in the story of the human race.

U.S. Air Services, Vol. 16, No. 12 (Dec. 1931), Washington, D.C., pp. 19-24, ills.

NICCOLINI, PIETRO. La conquista del volo. Poesia e realta.

Ferrara, Induatrie Grafiche, 1931, pp. 36.

NICHOLLS, PALMER. Serving aviation in the west.

Aero Digest, Vol. 19, No. 6 (Dec. 1931), New York, pp. 86-87, ills.

NICHOLS, P. W. The Alexander Flyabout.

National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), p. 18, ill.

NIGHT FLYING. *See* Croydon: Night flying at Croydon.

— *See* Mail: Night flying and air mails.

NILES, ALFRED S. Analysis of shallow truss spars. Parts 1, 2, and 3.

Airway Age, Vol. 13, Nos. 5, 10, 14 (Aug. 1, Sept. 5, Oct. 3, 1931), New York, pp. 114-116, 199-201, 224, 267-270, 304, ills., tabs.

— West coast progress in 1930. Transportation, airports, and design discussed.

Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, p. 47.

1930. L'année aéronautique 1930.

L'Aérophile, 39e année, No. 5 (15 mai 1931), Paris, pp. 131-134, ills.

— *See* Airports: Airport construction in 1930.

— *See* Besançon, Georges: L'année aéronautique.

— *See* Bowen, R. Sidney, Jr.: Trends of the industry during 1930.

— *See* Chenoweth, Opie: Engines in 1930.

— *See* Design: 1930 airplane design.

— *See* Doane, R. R.: Aeronautical finance in 1930.

— *See* Hanson, Earl: Canadian Aviation—1930.

1930. *See* McAleery, C. M.: The Royal Air Force in 1930.

— *See* Marolles, R. J. de: The 1930 Paris show—European and American practices.

— *See* Newell, Joseph S.: Structural design progress in 1930.

— *See* Niles, Alfred S.: West coast progress in 1930.

— *See* Pearson, John B.: Materials in 1930.

— *See* Roché, J. A.: Engineering, 1930-31.

— *See* Weather: Notes on the weather of 1930.

1930-1931. *Zur Jahreswende!*
Luftschau, 4. Jahrg., Nr. 1 (10. Jan. 1931), Berlin, pp. 1-2.

1931. Aeronautical diary 1931.
 London, Gale and Polden, Ltd.

— *See* Bigelow, A. A.: Airport growth in 1930-31.

— *See* Buenos Aires: The British Empire exhibition, Buenos Aires, 1931.

— *See* Clephane, Douglas W.: Light planes and 1931.

— *See* Deming, William C.: Shattering world's records in 1931.

— *See* Detroit: The Detroit aircraft exhibition.

— *See* Detroit: Looking at the 1931 show.

— *See* Grey, Charles Grey: Europe in 1930-31.

— *See* National air races: National race program.

— *See* National air races: The 1931 air races.

— *See* National air races: World aviation passes in review at 1931 National air races.

— *See* Nevill, John T.: The national aircraft show of 1931.

— *See* Warner, Edward Pearson: What of the year to come.

NISHIMURA, GENROKURO. *See* Sezawa, Katsutada, and Genrokuro Nishimura: Stresses under tension in a plate with a heterogeneous insertion.

NISTRI, UMBERTO. Un metodo per l'addestramento del bombardiere e per il controllo sperimentale del tiro dall'alto.
Riv. Aer., Anno 7, N. 9 (sett. 1931), Roma, pp. 447-477, ills.

NIXON, LAURENCE A. Airline rates and routes. Vols. 1-2; Oct. 1929-July 1930.
 East Stroudsburg, Penna., Air Transportation, inc., 1929-30, ills., maps.

NOBILE, UMBERTO. Il volo alla conquista del segreto Polare.
 Milano, A. Mondadori.

— With the "Italia" to the North Pole.
 New York, Dodd, Mead, 1931, pp. 358, ills.
 Translated by Frank Fleetwood.

— *See* Schäffer, Ernst: Glück ab; bahnbrecher der lüfte.

NOISE. Aircraft noise.
Aeronautics, Techn. Rep. Aero. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 62-65.

NOISE.

Aeroplane, Vol. 40, No. 16 (April 22, 1931), London, pp. 725-726, 728, tabls.

— On noise in aeroplanes.

Aeroplane, Vol. 40, No. 16 (April 22, 1931), London, pp. 701-702, 704, 706, 708, ills.

— See Davis, A. H.: Noise.

NOMENCLATURE. Nomenclatore del materiale speciale d'aeronautica. Volume 3°, categoria 1^a fascicolo 15: Catalogo nomenclatore delle aggiunte e varianti da apportare al nomenclatore del velivolo A 300-4, trasformato in A 300-6, con motore A 20. (Ministero dell'aeronautica; Direzione generale delle costruzioni e degli approvvigionamenti).

Torino, tip. Quartara, 1930, pp. 51.

— See Hegener, Henri: Taalzuivering.

— See Thorpe, Leslie Aaron: Simplified definitions and nomenclature for aeronautics.

NOORDUNG, HERMANN. Das problem der befahrung des weltraums; der raketenmotor.

Berlin, R. C. Schmidt & Co., 1929, pp. 188, ills., diagrs.

NORTH POLE. See Polar exploration.

NORWAY, N. S. R. 100 Canadian flight, 1930. Journal written on board the ship. Nothing has been added since.

Journ. Roy. Aer. Soc., Vol. 35, No. 245 (May 1931), London, pp. 401-414.

NOSARI, ADONE. Ali e vele sull'Atlantico.

Milano, Casa editrice Ceschina, 1931, pp. 283, ills.

NOTO, HISASHI. Electric oscillations in the atmosphere.

Japanese Journal of Astronomy and Geophysics, Vol. 8, No. 3, Tokyo, 1931, pp. 187-207, ills., tabls.

NOVILLE, GEORGE O. Ice on the wings.

National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, pp. 20, 70.

NOYES, RICHARD WOODMAN. An integrating manometer for use in wind tunnel pressure distribution measurements.

National Advisory Committee for Aeronautics, Technical Notes No. 377, May 12, 1931, Washington, May 1931, pp. 6, ills., tabl.

— See Knight, Montgomery, and Richard W. Noyes: Span-load distribution as a factor in stability in roll.

NOZZLES. See Gelalles, Achilles George: Coefficients of discharge of fuel injection nozzles for compression-ignition engines.

— See Gelalles, Achilles George, and E. T. Marsh: Effect of orifice length-diameter ratio on the coefficient of discharge of fuel-injection nozzles.

— See National Advisory Committee for Aeronautics: The design of injection nozzles. A summary of five N.A.C.A. reports on systematic investigations of practical use for engineers.

— See Spanogle, J. A., and G. T. Hemmeter: Development of an impinging-jet fuel-injection valve nozzle.

NUMACHI, FUKUSABURŌ. Aerofoil theory of propeller turbines and propeller pumps with special reference to the effects of blade interference upon the lift and cavitation.

The Technology Report of the Tōkoku Imperial University, Vol. 8, No. 3, 1929, Sendai, Japan.

NUNGESSION, CHARLES. *See* Calembert, Baron Louis de: Nungesser—as I knew him.

NUTT, ARTHUR. The cooling of engines. Experiments undertaken to show the possibilities of high temperature liquid cooling.

Aircraft Engineering, Vol. 3, No. 29 (July 1931), London, pp. 172-173, ills.

— Installing the engine.

Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Calif., pp. 26-29, ills.

NUTT, A. E. WOODWARD, A. F. SCROGGS, and E. FINN. Range of aircraft with air-cooled radial engine using altitude control.

Aer. Res. Comm., Rep. Mem., No. 1399 (Ae. 520-T. 3090), November 1930, London, 1931, pp. 8, diagrs.

NUTT, A. E. WOODWARD. *See* Finn, E., and A. E. Woodward Nutt: Accelerations on aircraft during manœuvres.

— *See* Maitland, C. E., and A. E. Woodward Nutt: Flight tests on the variation of the range of an aircraft with speed and height.

— *See* Stevens, H. L., and A. E. Woodward Nutt: Charts for aircraft performance reduction.

O

ÖBERBECK. *See* Banarji and Barave: On Oberbeck's vortices.

OCEAN. *See* Dijk, Evert van: Over den oceaan, onze oost-west vlucht Europa-Amerika, met talrijke foto's van den tocht; inleiding van A.H.G. Fokker; voorwoord van Kingsford Smith.

— *See* Italy: De eskader-oceaanaanvlucht der Italianen.

— *See* Orlovius, Heinz: Deutsche Tränsozeanplane.

OEHMICHEN. L'hélicostat Oehmichen.

L'Aérophile, 39e année, No. 10 (15 oct. 1931), Paris, pp. 308-311, ills.

— De Oehmichen helicostat.

Het Vliegveld, 15de Jaarg., No. 6 (Juni 1931), Amsterdam, pp. 213-214, ills.

ÖSTERREICHISCHEN AËRO-CLUB. 30 Jahre Österreichischer Aéro-Club 1901-31. Wien, Verlag des Österreichischer Aero-Club, 1931, pp. 199, ills.

OESTRICH, HERMANN. Die Aussichten des Strahltriebs für Flugzeuge unter besonderer Berücksichtigung des Abgas-Strahltriebs.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 316-328, ills., diagrs.

— Theoretische Untersuchung über die Möglichkeiten des Nachladeverfahrens als Mittel zur Aufrechterhaltung der Leistung von Viertakt-Motoren in grösseren Höhen.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 337-342, ill., diagrs., tabs.

— Untersuchung eines Flugmotoren-Geblases, Bauart Argus-Roots.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 329-336, ills. diagrs.

OILS. Aviation engine oil.

Air Corps Information Circular, Vol. 7, No. 661 (Aug. 25, 1931), Washington, United States Government Printing Office, 1931, pp. 2.

Air Corps Technical Report No. 3493.

OILS. *See* King, R. O., and H. Moss: Detonation, mineral lubricating oils and blended fuels.

— *See* Wright, Milton: Flying to find oil.

— *See* Yamaguchi, Bunnosuke: Action of antioxygens in the oxidation of unsaturated fatty oils.

OLDERMAN, HOWARD C. Trouble shooting on aviation engines.
Detroit, Aidas Printing Co., 1931, pp. 15.

OLEO strut. Dynamic test of long stroke oleo strut with compensating valve.

Air Corps Information Circular, Vol. 7, No. 658 (April 1, 1931), Washington, United States Government Printing Office, 1931, pp. 3, diagrs.

Air Corps Technical Report No. 3352.

OLSHEVSKY, DIMITRY. A machine for automatic generation of airfoils.
Physical Review, Vol. 37, No. 4 (Feb. 15, 1931), Minneapolis, pp. 401-404, ills.

OLSHEVSKY, DIMITRY E. A new vertical wind tunnel.
Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 54-55, ills.

OLSZEWSKI, STANISLAW. Dynamometr powietrzny Heenan-Fell zainstalowany w Stacji Silnikowej I.B.T.L.
Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 4, Warszawa, 1930, pp. 28-30, ills., diagr.

— *See* Peter, Franciszek, Stanisław Olszewski, Jozef Dziewonski, i Hubert Krasiński: Badania nad zastosowaniem mieszanki alkoholowej do silnika Lorraine-Dietrich 450 KM.

O'MEARA, J. K. (JACK). The 1931 Rhoen soaring contest at the Wasserkuppe.
Aero Digest, Vol. 19, No. 4 (Oct. 1931), New York, pp. 48-49, 120, ills.

ORANGES, L. C. Profits from a small-city airport.
Airport Section, Western Flying, Vol. 9, No. 3 (March 1931), Los Angeles, Calif., pp. 87-88, ill.

ORD, J. GARESCHÉ. Cooperative training for air and ground troops.
U.S. Air Services, Vol. 16, No. 4 (April 1931), Washington, pp. 18, 20-22.

OREGON. Oregon aeronautic laws regulating flying and registering aviators.
Salem, Published by the Oregon State Board of Aeronautics, 1931, pp. 15.

OREGON TRAIL. *See* Johnson, Robert: The new "Oregon trail."

ORIENTATION. *See* Ebert: Ortsbezeichnung zur Luft-orientierung.

ORLOVIUS, HEINZ. Deutsche Transoceanpläne.
Luftschau, 4, Jahrg., Nr. 11 (10. Juni 1931), Berlin, p. 86.

— *See* Supf, Peter, und Heinz Orlovius: Die Welt der Flieger.

ORMEROD, A. Full scale measurements of lift coefficients of a Bristol fighter with R.A.F. 34 wings and slots.

Aer. Res. Comm., Rep. Mem., No. 1351, (Ae. 482-T. 3012), September 1930, London, 1931, pp. 9, ills., diagrs., tabls.

— *See* Jennings, W. G., and A. Ormerod: Full scale experiments on high tip speed airscrews. The effect of thickness of section on airscrew performance

OROZCO, I. G. Estereofotogrammetria terrestre operaciones de campo. Reconocimiento, elección, localización y orientación de las bases. Bases dobles o combinadas. Trabajos en una estación.

Ingeniera, Vol. 5, No. 6 (junio 1931), Mexico, pp. 203-211.

ORR, GEORGE W. Flying instruction as it should be.

Scient. Amer., Vol. 145, No. 3 (Sept. 1931), New York, pp. 160-162, ills.

ORR, JAMES. Several cases of non-circular torsion solved by analysis and direct test.

Aer. Res. Comm., Rep. Mem., No. 1393 (Ae. 514-T. 3003), September 1930, London, 1931, pp. 21, ills., diagrs., tabls.

ORSATTI, LOUIS A. See Henderson, John C., and Louis A. Orsatti: Official miniature aircraft instruction manual, written for Los Angeles Times—Playground Aircraft League.

OSBORN, ROBERT R. Buffalo plant of Curtiss Aeroplane & Motor Co.

U.S. Air Services, Vol. 16, No. 6 (June 1931), Washington, pp. 36-38, ills.

OSCILLATIONS. See Capetti, A.: Sul calcolo dei periodi di oscillazione torsionale libera degli alberi.

— See Parker, A. E.: Wing oscillation.

OSSWALD, EMMY. Zur rationalisierung der innerdeutschen handelsluftfahrt.

Heidelberg, Weiss, 1930, pp. 95.

Heidelberger Studien aus dem Institut fur Sozial und Staatswissenschaften, Bd. 1, Heft 1.

OSTERHOUT, HOWARD. The doctrine of *res ipsa loquitur* as applied to aviation.

Air Law Review, Vol. 2, No. 1 (Jan. 1931), New York, pp. 9-28.

OTT, JOSEPH S. Model airplanes; building and flying.

Chicago, The Goodheart-Willcox Company, inc., 1931, pp. xiv, 358, ills., diagrs.

OWER, E. A micromanometer of high sensitivity.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1353-1359, diagrs. Rep. Mem. No. 1308 (Ae. 448).

— See Nayler, J. L., and E. Ower: Aviation of to-day; its history and development; with a chapter on aircraft engines by W. J. Stern.

OWER, E., and C. T. HUTTON. The drag of small streamline bodies.

Aer. Res. Comm., Rep. Mem., No. 1409 (Ae. 530-T. 3135), June 1931, London, 1931, pp. 7, diagrs., tabls.

— Interference of a streamline nacelle on a monoplane wing.

Aer. Res. Comm., Rep. Mem., No. 1395 (Ae. 516-T. 3038 and "a"), December 1930, London, 1931, pp. 17, ill., diagrs., tabls.

— Investigation of the boundary layers and the drags of two streamline bodies.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, pp. 205-223, ills., diagrs., tabls. Rep. Mem. No. 1271 (Ae. 417).

OXFORD UNIVERSITY. Oxford University air squadron.

Flight, No. 1180, Vol. 23, No. 32 (Aug. 7, 1931), London, pp. 784-787, ills.

OXIDATION. See Mardles, R.: Oxidation characteristics of fuel vapours with regard to engine detonation.

OXYGEN. See Binnie, A. M.: The influence of oxygen on corrosion fatigue.

OZONE. See Dobson, G. M. B.: Ozone in the upper atmosphere and its relation to meteorology.

P

P. De ontvangst van Van Tijen.

Het Vliegveld, 15de Jaarg., No. 4 (April 1931), Amsterdam, pp. 116-117, ills.

P.B. See Deviators: P.B. Deviators. A new type of instrument showing deviation from set course in all directions.

PABST, WILHELM. Landing impact of seaplanes.

National Advisory Committee for Aeronautics, Technical Memorandums No. 624, June 11, 1931, Washington, June 1931, pp. 29, ills., diagrs., tabls.

— Über den Landestoss von Seeflugzeugen.

Zeitschr. Flugt. Motorluftschr., 22. Jahrg., 1. Heft (14. Jan. 1931), München und Berlin, pp. 13-28, ills., tabls., diagrs.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 43-58, ills., diagrs., tabls.

PACIFIC. See Standard Oil Company of California: Landing fields of the Pacific west.

PAGE, VICTOR W. Aviation engine examiner.

New York, Norman W. Henley Publishing Co., 1931, pp. 440, ills.

PALASTINE. Palästina. Verordnung.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 13-14 (4. April 1931), Berlin, p. 92.

PALERMO. See Bolla, Filippo: La frequenza del vento al suolo e a quote a Palermo.

PALUMBO, LUISA. Meteorologia e navigazione aerea.

Riv. Aer., Anno 7, N. 6 (giugno 1931), Roma, pp. 488-493, ills.

PAN AMERICA. See Duke, Donald: Procedure and personnel of the Pan American airways system.

— See Latin America.

— See Rochford, Daniel: Twenty thousand memorable miles over Pan American skyways.

PANAMA. La flotte Américaine et la défense aéronavale de Panama.

L'Illustration, 89e année, No. 4593 (14 mars 1931), Paris, p. 308, ill.

PANAMA CANAL. See United States Department of State: Regulations to govern air navigation in the Canal Zone. Promulgated by the Secretary of State. September 22, 1931.

PARACHUTES. Het Aviolanda-Robur valscherf.

Het Vliegveld, 15de Jaarg., No. 7 (Juli 1931), Amsterdam, pp. 240-241, ills.

— On parachutes.

Aeroplane, Vol. 40, No. 20 (May 20, 1931), London, p. 934.

— Le parachute "Salvator."

Roma, anon. Innovaz. aeronautiche (tip. C. Colombo), 1930, pp. 48.

— Le rallye-parachute féminin.

L'Illustration, 89e année, No. 4607 (20 juin 1931), Paris, p. 299, ill.

— Safety parachute for airplane.

United States Daily, Tuesday, June June 23, 1931, Washington, D.C., p. 4, ill.

— What's next in chutes.

Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, Cal., p. 29.

— See Appel, Wm. D., and R. K. Worner: An investigation of cotton for parachute cloth.

— See Diard, Ennemonde: Coups d'ailes de l'oiseau à l'avoin. Préface de M. Laurent Eynac, Ministre de l'Air.

— See Ducout, Marcel-S.: Le rallye-parachutes de l'Aéro-club.

PARACHUTES. *See Flying: Fallschirm, Flugzeug, Zeppelin.*

- *See Freri, Prospero: L'impiego del paracadute nelle guerre future.*
- *See Great Britian. Air Ministry: Parachute manual.*
- *See Hegener, Henri: Uit de valschermerwereld.*
- *See Irvin: The Irvin air chute.*
- *See Irvin: Some Irvin airchute statistics.*
- *See Irving Air chute Co., inc., and Floyd Smith Aerial Equipment Co.: Claims of patents for parachute are adjudged valid and infringed.*
- *See K., A.: A convenient parachute attachment.*
- *See K., A.: Photography during a parachute jump.*
- *See Robur: Den Svenska fallskärmen "Robur."*
- *See Stanley, Charles M.: Modern parachutes.*
- *See Steiner, Hans: Der fallschirm als rettungsmittel, zum lastenabwurf und seine verwendung als flugzeugsicherung.*
- *See Stryk, Heinrich von: Rigging lines for parachutes. A suggested alternative to silk or hemp.*
- *See United States Department of Commerce. Aeronautics Branch: Parachute supplement. Air commerce regulations. Effective July 1, 1930.*
- *See White, Bert: 27,000 feet down.—By chute.*

PARIS. Die Internationale Luftfahrtausstellung in Paris, November bis Dezember 1930.

Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 16 (18. April 1931), Berlin, pp. 473-480, ills.

- De luchtvaart-salon te Parijs.
Het Vliegveld, 15de Jaarg., No. 1 (Jan. 1931), Amsterdam, pp. 28-31, ills.
- *See Christian, Manfred: Rückblick auf die Motorenschau des 12. Pariser Salons, Dezember 1930.*
- *See Cooper, Mabel C.: An early bird goes to Paris.*
- *See Lamarche, Paul E.: The Paris Salon de l'Aviation.*
- *See Marolles, R. J. de: The twelfth Paris aero show.*
- *See Pollard, H. J.: The Paris aero show, 1930.*
- *See Swan, Andrew: The progress of aero engine design at the Paris show.*

PARKER, A. E. Horsepower at speed of sound.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1187, Vol. 23, No. 39 (Sept. 25, 1931), London, pp. 970d-970f, (68-70), diagrs.

— Wing oscillation.

Aircraft Engineer, Flight Enginering Section, Suppl. to No. 1196, Vol. 23, No. 48 (Nov. 27, 1931), London, pp. 1174a-1174c, (81-83), diagrs.

PARKINSON, H. Strut fairing.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1196, Vol. 23, No. 48 (Nov. 27, 1931), London, pp. 1174d-1174e, (84-85), diagrs.

PARKINSON, LESLIE R. Technical description of the Jacobs L-3 aircraft engine. *Aviation Engineering*, Vol. 5, No. 5 (Dec. 1931), Washington, N.J., pp. 23-25, illus., diagr., tabl.

PARNALL. The Parnall Parasol monoplane. *Flight*, No. 1164, Vol. 23, No. 16 (April 17, 1931), London, pp. 329-331, illus.

PARROTT, R. J. Air Force training. Some constructional considerations of the ideal military training aeroplane. *Flight*, No. 1175, Vol. 23, No. 27 (July 3, 1931), London, pp. xxxxi-xxxv, illus.

— Some constructional considerations of the ideal military training aeroplane. *Aeroplane*, Vol. 41, No. 1 (July 1, 1931), London, pp. 44-45, illus.

PARSEVAL, AUGUST VON. Major a. D. August von Parseval. *Die Umschau*, 35. Jahrg., Heft 5 (31. Jan. 1931), Frankfurt, a.M., p. 98, port.

PASCALE, RENATO. La cooperazione aereo-terrestre. La defesa antiaerea. *Bologna*, tip. P. Neri, 1931, pp. 28.

PASQUALINI, CLODOVEO. La resistenza dell'aria per corpi sferici rotanti a velocità prossima a quella del suono. *Riv. Aer.*, Anno 7, N. 3 (marzo 1931), Roma, pp. 443-457, illus. diagrs.

PATENTS. Patent digest; abridgments of current U.S. airplane patents. Vol. 1. Jan. 15, 1930. New York, Manufacturers Aircraft Association, inc., 1930, diagrs. Semimonthly.

PATERSON, HUNTLEY. *See* Treusch von Buttlar-Brandenfels, Horst: Zeppelins over England. Translated from the German by Huntley Paterson.

PATERSON, ROBERT. Safety. *Western Flying*, Vol. 9, No. 6 (June 1931), Los Angeles, Cal., pp. 37-38, diagrs.

PATRICK trophy. *See* Richardson, Phil: Lieut. Westley wins Patrick trophy race.

PATTERSON, H. S. *See* Whytlaw-Gray, R., and H. S. Patterson: Smoke. A study of aerial disperse systems.

PATTERSON, JOHN McCCLURE. At the famous Wasserkuppe. *Nat. Aer. Mag.*, Vol. 9, No. 11 (Nov. 1931), Washington, pp. 6-11, illus.

PEARSON, JOHN B. Materials in 1930. *Airway Age*, Vol. 12, No. 1 (Jan. 1931), New York, pp. 40-43, illus.

PECK, WILLIAM CECIL. Dynamic and flight tests on rubber-cord and oleo-rubber-disk landing gears for an F6C-4 airplane. National Advisory Committee for Aeronautics, Report No. 366, Feb. 16, 1931, Washington, U.S. Government Printing Office, 1930 [1931], pp. 19, illus., diagrs., tabls.

PECK, WILLIAM CECIL, and ALBERT P. BEARD. Static, drop, and flight tests on Musselman type airwheels. National Advisory Committee for Aeronautics, Report No. 381, June 26, 1931, Washington, U.S. Government Printing Office, 1931, pp. 20, illus., diagrs., tabls.

PECKER, J. S. Autogyro rotor system. *Automotive Ind.*, Vol. 64, No. 19 (May 9, 1931), New York, pp. 732-734.

PENDULUM. *See* Syôyama, Mituo: A method of laboratory device to record the period of a pendulum motion.

PENN, R. J. *See* Kerr, P. S.: Fuel flowmeters designed to measure mass flow.

PENNSYLVANIA. *See* Turner, Ellwood, J.: Resumé of experience of Pennsylvania in state regulation.

PENSACOLA, Florida. *See* Studley, Barrett: Learning to fly for the Navy.

PÈPE, PAUL. *Précis d'hydraviation; cours de l'École Technique d'Aéronautique et de Construction Automobile.* Préface de François Denhaut. Paris, F.-L. Vivien, 1931, 2 vols., ills., diagrs.

PERFORMANCE. *See* Fairbanks, Andrew J.: Aeroplane performance prediction. A description of an empirical chart from which approximate characteristics may be estimated.

- *See* Jennings, W. G.: The effect of span on aircraft performance.
- *See* Maitland, C. E., and A. E. Woodward Nutt: Flight tests on the variation of the range of an aircraft with speed and height.
- *See* Mokrzycki, Gustaw Andrzej: Pomiar spółczynników wyczynów.
- *See* Perring, W. G. A., and C. Callen: Moments and forces on a yawed model aeroplane.
- *See* Spencer, K. T.: On the effect of altitude upon the distance required for an aircraft to take off and climb 20 meters giving generalised curves of weight reduction necessary if a given aircraft is to comply with the requirements of A.P. 1208 under adverse atmospheric conditions.
- *See* Stevens, H. L., and A. E. Woodward Nutt: Charts for aircraft performance reduction.

PERRING, W. G. A., and C. CALLEN. The influence of a stopped airscrew on the lift and drag of an aerofoil.

Aer. Res. Comm., Rep. Mem., No. 1347, (Ae. 479—T. 2992), May 1930, London, 1931, pp. 7, ills., diagrs., tabls.

- Moments and forces on a yawed model aeroplane. Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 528-530, diagrs., tabls. Rep. Mem. No. 1319. (Ae. 455.)

— Validity of large scale tests in an open jet wind tunnel.

Aer. Res. Comm., Rep. Mem. No. 1348, (Ae. 480—T. 2994), July 1930, London, 1931, pp. 12, ills., diagrs., tabls.

PERRING, W. G. A. Wind tunnel tests on a symmetrical aerofoil (Göttingen 429 section).

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 341-344, diagrs., tabls. Rep. Mem. No. 1243 (Ae. 398.)

- *See* Bradfield, F. B., and W. G. A. Perring: Drag tests on a large model in a small tunnel.

— *See* Douglas, G. P., W. G. A. Perring, and R. A. Fairthorne: Wind tunnel tests with high tip speed airscrews. Experimental investigation of blade twist load.

— *See* Wood, R. McKinnon, and W. G. A. Perring: Stresses and strains in airscrews with particular reference to twist.

PERU. Commercial aviation in Peru.

Flight, No. 1198, Vol. 23, No. 50 (Dec. 11, 1931), London, p. 1216.

PESCARA. *Ensayos del helicóptero Pescara en Barcelona.*

Ibérica, Año 18, Núm. 862 (24 enero 1931), Barcelona, pp. 49-54, ills.

- *See* Pouit, R.: Un hélicoptère de 40 HP; le Pescara 4 S.

PETER, FRANCISZEK, STANISLAW OLSZEWSKI, JÓZEF DZIEWOŃSKI i HUBERT KRASIŃSKI. Badania nad zastosowaniem mieszanki alkoholowej do silnika Lorraine-Dietrich 450 KM.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 6 (Nr. 28), Warszawa, 1931, pp. 33-74.

PETERS, H. Druckmessung.

Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 1. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. 487-510, ills.

— Effect of viscosity in speed measurements with double-throat venturi tubes.

National Advisory Committee for Aeronautics, Technical Memorandums No. 633, Aug. 13, 1931, Washington, August 1931, pp. 5, diagrs.

— Einfluss der Zähigkeit bei Geschwindigkeitsmessungen mit Staudruckmultiplikatoren. (Bruhnsche Venturi-Doppeldüse.)

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 11. Heft (15. Juni 1931), München und Berlin, pp. 321-323, ill., diagrs.

— See Mueller, H., and H. Peters: Geschwindigkeits- und Mengenmessungen von Flüssigkeiten.

PETERSEN, CARL O. Med Byrd og Balchen mot Sydpolen
Oslo, 1931.

PETERSON, E. Abwindmessungen hinter Tragflügeln mit abgerissener Strömung.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 10. Heft (28. Mai 1931), München und Berlin, pp. 289-300, ills., diagrs.

— Downwash measurements behind wings with detached flow.

National Advisory Committee for Aeronautics, Technical Memorandums, No. 632, Aug. 6, 1931, Washington, August 1931, pp. 6, ills., diagrs.

PETSCHOW, ROBERT. Freiballonsport.

Luftschau, 4. Jahrg., Nr. 11 (10. Juni 1931), Berlin, p. 85, ills.

PFISTER, E., und H. ESCHKE. Der bau des Flugzeuges. Heft III. Der Rumpf.

Berlin-Charlottenburg, Verlag C. J. E. Volkmann, 1930, pp. 62, ills.

PHILIPPINE ISLANDS. See Selga, Miguel: The velocity of the wind at Manila, Baguio, Iloilo and Cebu.

PHILIPPOVICH, ALEXANDER V. Der jetzige Stand der Prüfung von Flugmotorenkraftstoffen.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 2. 3. Heft (28 Jan. 14. Feb. 1931), München und Berlin, pp. 47-49, 80-84, diagrs. Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 542-548, diagrs., tabs.

— Vergleichende motorische Untersuchung von Kraftstoffen.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 549-566, diagrs., tabs.

PHILIPSON, FILIPPO. La soluzione di un problema classico.

Riv. Aer., Anno 7, N. 2 (feb. 1931), Roma, pp. 272-281, ills.
Halicopters.

PHOTOGRAMMETRY. Macchina aerofotogrammetrica multipla della ditta photogrammetrie GmbH.

Riv. Aer., Anno 7, N. 11 (nov. 1931), Roma, pp. 375-380, ills.

— See Baeschlin, F.: Internationales Archiv für Photogrammetrie.

— See Cassinis, G.: Ricerche sul metodo aerofotogrammetrico Nistri.

PHOTOGAMMETRY. *See* Grüber, O. v.: *Traité de photogrammétrie aérienne et terrestre.*

- *See* Lacmann, Otto: *Fortschritte auf dem Gebiete der Photogrammetrie.*
- *See* Società Anonima Rilevamenti Aerofotogrammetrici. Rome: *Il metodi aerofotogrammetrico "Nistri" e le sue—pratiche applicazioni.*
- *See* Soriano y Viguera, J.: *La moderna fotogrametría automática.*

PHOTOGRAPHY. *Air photography.*

London, His Majesty's Stationery Office.

- *Apparato aerofotografico K-10.*
Riv. Aer., Anno 7, N. 1 (gen. 1931), Roma, p. 163, ill.
- *Photographie aérienne à grande distance avec image de lointains invisibles à l'oeil.*
L'Aéronautique, 13me année, No. 142 (mars 1931), Paris, p. 78, map.
- *See* Askania: *L'enregistreur photographique de trajectoires Askania.*
- *See* Church, Earl Frank: *Methods of eliminating ground surveying for control in aerial photographic mapping.*
- *See* Coppelotti, Celestino: *Designazione dei bersagli e fotografie dall'aeroplano.*
- *See* Coppelotti, Celestino: *Fotografie dall'aeroplano: La scala e l'orientamento.*
- *See* Eagle: *A new eagle camera.*
- *See* Great Britain: *La fotografia aerea nell'aviazione britannica.*
- *See* Gutkowski, Tadeusz: *Metoda określenia mnożnika oświetlenia przy użyciu filtrów barwnych w fotografii lotniczej.*
- *See* Gutkowski, Tadeusz: *Wpływ grubości ziarna emulsji fotograficznej na budowę aparatu fotolotniczego.*
- *See* Hotine, Martin: *The Fourcade stereogoniometer.*
- *See* Hotine, Martin: *Surveying from air photographs.*
- *See* K., A.: *Photography during a parachute jump.*
- *See* Lacmann, Otto: *Die neue Startmesskammer System DVL-Zeiss.*
- *See* Moraczewska, Marja: *Doczulanie emulsyj krajowych na czerwień i prodczerwien.*
- *See* Moraczewska, Marja, i Włodzimierz Daniewski: *O oświetleniu ciemni fotograficznej.*
- *See* Roussilhe, H.: *Emploi de la photographie aérienne aux levers topographiques à grande échelle.*
- *See* Schmieschek, Ulrich: *Hypersensibilisierung optisch sensibilisierter Emulsionen und optische Sensibilisierung hypersensibilisierter Emulsionen.*
- *See* Schmieschek, Ulrich: *Versuche zur Steigerung der Haltbarkeit hypersensibilisierter Emulsionen.*
- *See* Steewen, O. P.: *van: Von der photographischen Flinte zum kinematographischen Maschinengewehr.*

PHOTOGRAPHY. *See* Wood, Edward S., Jr.: *Sell Obliques*.

— *See* Zanetti, M., and C. Avarello: *Manuale del fotografo d'aeronautica*.

PHOTOMETRIC TUNNELS. *See* Jacobs, A. M.: *Photometric tunnel at Wright Field*.

PIAGGIO. L'S 55 metallico.

L'Aerotecnica, Vol. 11, Nos. 6-7 (giug.-lugl. 1931), Roma, pp. 584-861, illus. English abstract 896.

PICCARD, AUGUSTE. *L'ascension du professeur Piccard*.

L'Aérophile, 39e année, No. 7 (15 juil. 1931), Paris, pp. 195-196, illus.

— *Der Höhenballon von Professor Piccard*.

Luftschau, 4. Jahrg., Nr. 6 (24 März 1931), Berlin, p. 46, ill.

— *Le livre de bord du professeur Piccard*.

L'Aérophile, 39e année, No. 8 (15 août 1931), Paris, pp. 244-247.

— *Met professor Piccard naar de stratosfeer*.

Het Vliegveld, 15de Jaarg., No. 6 (Juni 1931), Amsterdam, pp. 211-213, illus.

— *Le record d'altitude battu par un ballon*.

L'Aéronautique, 13me année, No. 146 (juil. 1931), Paris, 237, ill.

— *See* H., H.: *Professor Piccard over zijn hoogtevaart. Gevangenen der stratosfeer*.

— *See* Neue Augsburger Zeitung: *Professor Piccards forschungsflug in die stratosphäre; verlauf des stratosphärenfluges und dessen wissenschaftliches ergebnis*.

PICCARD, AUGUSTE, y PAUL KIPFER. *Tentativas del profesor Piccard y otros esfuerzos para el conocimiento de la estratosfera*

Ibérica, Año 181, Núm. 884 (11 julio 1931), Barcelona, pp. 34-38, illus., ports.

PICKETT, CHARLES. *The Empire State building mooring mast*.

Air Law Review, Vol. 2, No. 2 (April 1931), New York, pp. 130-152.

PIERCE, MAURICE RUMFORD. *See* United States Hydrographic Office: *Position tables for aerial and surface navigation*.

PIERCY, N. A. V. *Aerodynamics for engineers. IV. Elliptic loading—channel corrections—downwash—viscous motion and boundary-layer theory. V. Aeroplane performance in normal flight—other steady motions—elements of air-screw theory. VI. An introduction to the study of aeroplane stability with a section on control*.

Aircraft Engineering, Vol. 3, Nos. 23-25 (Jan.-March 1931), London, pp. 15-18, 43-46, 67-69, 75, illus., diagrs.

— *The fifth air congress. The report of the papers read and discussions during the proceedings at the Hague*.

Aircraft Engineering, Vol. 3, No. 31 (Sept. 1931), London, p. 220.

— *The present position in aeronautics*.

Journ. Roy. Soc. Arts, Vol. 79, Nos. 4112-4114 (Sept. 11, 18, 25, 1931), London, pp. 911-925, 929-941, illus., diagrs.

PIERSOL, JAMES V. *Adapting the airplane to the newspaper. A report covering an experiment conducted by the Detroit News*.

Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 35-39, 122, illus.

PILLARD, M. *L'hélice "roue-libre" Paulhan-Pillard pour l'amélioration du vol avec moteur arrêté*.

L'Aéronautique, 13me année, No. 146, *Bulletin L'Aérotechnique*, 9e année, No. 103 (juil. 1931), Paris, pp. 245-252, illus., diagrs., tabls.

PILOTING. Manuel of air pilotage.

London, His Majesty's Stationery Office,

— Practical flying for amateurs.

London, Published for the proprietors of Shell by Simkin Marshall, Ltd., 1931, pp. 165, ills.

— See Amateurs: Practical flying for amateurs.

— See Barnard, Charles Douglas: Barnard on learning to fly.

— See Bowen, Robert Sidney: Flying from the ground up.

— See Hope, W. Lawrence, and Norman W. Kennedy: A complete course for the commercial flying license.

— See Lainé, André, et G. Guet: Comment devenir aviateur; formalités à remplir—examens à passer—écoles à choisir—les principes de pilotage.

— See Mills, P. W. F.: Angles on practical flying.

— See Sandberg, G.: Uit de praktijk van het vliegen.

PILOTS. Pilots handbook 1931—written, compiled, edited and published by Pilots Handbook Publishing Co.

Los Angeles, California, 1931, ills., maps, diagrs.

— See Chase, John Samson, and Nolie Mumey: Physical requirements for commercial flyers.

— See United States Department of the Navy: Syllabus for the training of student naval aviators and student naval aviation pilots.

PINE. See Kozanecki, Stefan: Badania świerka górskiego z Worochty.

PINKERTON, ROBERT M. Effect of nose shape on the characteristics of symmetrical airfoils.

National Advisory Committee for Aeronautics, Technical Notes No. 386, Aug. 14, 1931, Washington, August 1931, pp. 16, diagrs., tabs.

— See Jacobs, Eastman N., and Robert M. Pinkerton: Tests of N.A.C.A. airfoils in the variable-density wind tunnel.

PINNA, PIETRO. L'aviazione in montagna.

Riv. Aer., Anno 7, N. 1 (gen. 1931), Roma, pp. 1-15.

PIONEER INSTRUMENT COMPANY. See Wobblemeter: The "Wobblemeter." A new device for measuring human fatigue.

PIPPARD, A. J. SUTTON, and W. E. FRANCIS. The stresses in a radially spoked wire wheel under loads applied to the rim.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 685-727, ill., diagrs., tabs. Rep. Mem. No. 1302 (Ae. 445).

— Stresses in wired wheels.

Philosophical Magazine, Vol. 11, No. 69 (Feb. 1931), London, pp. 233-283.

PIQUÉ. See Cochercano, Jean: Note sur le vol en piqué des avions.

PIRATH, CARL. Die luftverkehrswirtschaft in Europa und in den Vereinigten Staaten von America.

München und Berlin, Verlag R. Oldenbourg, 1931, pp. 105, ills.

PIROZZI, ALFONSO. L'utilizzazione economica delle linee aeree e la cooperazione del velivolo cogli altri mezzi de trasporto.

Riv. Aer., Vol. 7, N. 1 (gen. 1931), Roma, pp. 49-57.

PISTOLESI, E. Il calcolo approssimato del biplano indefinito.
L'Aerotecnica, Vol. 11, N. 12 (dic. 1931), Roma, pp. 1506-1517, diagrs.

- Considerazioni sul funzionamento dell'elica con tubo addizionale.
L'Aerotecnica, Vol. 11, N. 4 (aprile 1931), Roma, pp. 419-423, ills. English abstract pp. 502-503.
- Correnti e azioni dinamiche a velocità molto elevate.
L'Aerotecnica, Vol. 11, N. 6-7 (giugno-luglio 1931), Roma, pp. 701-729, ills., diagrs. English abstract, pp. 892-893.

PISTON RINGS. Piston rings in the making.
Flight, No. 1195, Vol. 23, No. 47 (Nov. 20, 1931), London, pp. 1157-1158, ills.

PITCAIRN, HAROLD. A defence of the autogiro.
Aeroplane, Vol. 41, No. 22 (Nov. 25, 1931), London, pp. 1228-1230.

PITCAIRN, HAROLD F. Autorotation.
Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, Calif., pp. 25-26, ills.

PITMAN, ERNEST. A docking device for airships.
Flight, No. 1164, Vol. 23, No. 16 (April 17, 1931), London, pp. 343-344, ill.

PITTSBURGH. See Johnson, Charles P.: Pittsburgh city-county airport.

PLANETABLING. See Miller, O. M.: Planetabling from the air.

PLATES. See Sezawa, Katsutada: On the lateral vibration of a rectangular plate clamped at four edges.

PLATH, ERICH. Eindrücke vom 12. Segelflugwettbewerb auf der Rhön.
Zeitschr. Ver. Deutscher Ing., Bd. 75, Nr. 49 (5. Dez. 1931), Berlin, p. 1491.

PLEINES, WILHELM. Flugmessungen über den Einfluss von Handley-Page-Schlitzquerrudern auf Eigenschaften und Leistungen eines Flugzeuges vom Muster Albatros L 75-Ass im Höchstauftriebbereich.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 691-708, ills., diagrs., tabls.

- Die Flugzeugmuster des "Deutschlandflug 1931."
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 24. Heft (28. Dez. 1931), München und Berlin, pp. 713-717, ills.
- Nietverfahren im Metall-Flugzeugbau.
Hauszeit. der VA.W. u.d. Elftwerk A. G. fuer Aluminium, Vol. 3, No. 4-6, (April-June 1931), pp. 166-173, ills.

PLENDL, HANS. Über den Einfluss der elfjährigen Sonnenaktivitätsperiode auf die Ausbreitung der Wellen in der drahtlosen Telegraphie.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 665-671, diagrs.

— See Krüger, Kurt, und Hans Plendl: Horizontale Strahlungskennlinie einer Kurzwellen-Richtantenne mit gespeistem Reflektor.

POBJOY. A new Pobjoy engine.
Flight, No. 1162, Vol. 23, No. 14 (April 3, 1931), London, p. 292, ills.

— The Pobjoy "R" type engines.
Flight, No. 1171, Vol. 23, No. 23 (June 5, 1931), London, pp. 496-498, ills.

POGGI, L. Azioni aerodinamiche parallele al movimento su di un'ala piana animata da moto traslatorio uniforme e da moto oscillatorio.
L'Aerotecnica, Vol. 11, N. 6-7 (giug.-lugl. 1931), Roma, pp. 767-779, diagrs., tabls. English abstract pp. 895-896.

POGGI, L. Sul peso delle ali a sbalzo.

L'Aerotecnica, Vol. 11, N. 12 (dic. 1931), Roma, pp. 1518-1538, diagrs.

— Sulla variazione de apportarsi ai risultati delle esperienze eseguite al tunnel aerodinamico su di un modello alare.

L'Aerotecnica, Vol. 11, N. 4 (aprile 1931), Roma, pp. 424-445, diagrs., tabls. English abstract, pp. 503-504.

POLACK. *See* Gutkowski, Tadeusz: Teorja akomodacji barwnej oka, zaobserwowanej przez prof. Polack'a.

POLAND. Polish P type single-seat fighters. All-metal Gull-type wing monoplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 137, March 3, 1931, Washington, March 1931, pp. 10, ills.

POLAR EXPLORATION. *See* Andrée: De pooltocht van Andrée.

— *See* Derstroff, Hanns: Die polarfahrt des "Graf Zeppelin." "SOS Nau-tilus" kein "Stop Zeppelin."

— *See* Moltschanoff, P.: Polarfahrt im Nebel. Wolkenstudien während der Polarfahrt des Luftschiffs "Graf Zeppelin."

POLESINE, JOTTI DA BADIA. Il motore a vapore ed il suo impiego in aeronautica.

L'Aerotecnica, Vol. 11, N. 12 (dic. 1931), Roma, pp. 1555-1564, ills.

POLICE. *See* Allen, C. B.: Aerial police of New York City.

— *See* Roth, B.: Air branch of New York state police.

POLLARD, H. J. The Paris aero show, 1930.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1173, 1157, Vol. 23, No. 5, 9 (Jan. 30, Feb. 27, 1931), London, pp. 96a-96d (1-4), 184a-184d (9-12), ills.

POLLOCK, ROBERT E. What to do about motorless flight.

Western Flying, Vol. 9, No. 5 (May 1931), Los Angeles, Calif., p. 34.

PONCIN, HENRI. Hydrodynamique.—Sur le mouvement d'un fluide autour d'une cavitation.

C. R. Acad. Sci., T. 193, No. 13 (28 sept. 1931), Paris, pp. 481-482.

PORTO RICO. *See* Taylor, H. W.: Mapping Porto Rico from the sky.

PORTUGAL. Verordnung.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 45-46 (14. Nov. 1931), Berlin, pp. 334-335.

POST, WILEY, and HAROLD GATTY. Around the world in eight days; the flight of the Winnie Mae. Introduction by Will Rogers.

New York, Chicago, Rand, McNally & Company 1931, pp. 304, ills.

POSTAL SERVICE. *See* Mail.

POTEZ. Potez 37R2 military airplane. A two-place long-distance observation monoplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 152, Sept. 30, 1931, Washington, September 1931, pp. 5, ills.

— Próba ststyczna, samolotu Potez 27 A, firmy "Podlaska Wytwórnia Samolotów."

Instytut Badań Technicznych Lotnictwa, Sprawozdania i Prace, Warszawa, 1926, pp. 30-34, ills., diagrs.

POTEZ, HENRY. Politique industrielle.

L'Aérophile, 39e année, No. 12 (15 dec. 1931), Paris, p. 353.

POTTER, LESLIE S. Compass swinging afloat.
 Aero Digest, Vol. 19, No. 4 (Oct. 1931), New York, p. 51, diagrs.

- Compases and their care.
 Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 58-59, ills.
- Flying clubs in England.
 Airway Age, Vol. 12, No. 10 (Jun. 6, 1931), New York, pp. 565-567, ills.
- Navigation instruction in ground schools.
 Aero Digest, Vol. 18, No. 5 (May 1931), New York, pp. 56, 130, ill.
- The navigation of the air and meteorology.
 New York and London, Harper & Brothers, 1931, pp. xvii, 233, ill., maps, diagrs.
 Foreword by Capt. Sir Hubert Wilkins.

POUIT, R. Calcul de la vitesse d'atterrissage d'un avion à partir de ses caractéristiques aérodynamiques et de la vitesse verticale à l'atterrissage.
 L'Aéronautique, 13me année, No. 150, Bulletin L'Aérotechnique, 9e année, No. 107 (nov. 1931), Paris, pp. 385-386, diagrs.

- Un hélicoptère de 40 HP; le Pescara 4 S.
 L'Aéronautique, 13me année, No. 143 (avril 1931), Paris, pp. 122-123, ills.

POUR LE MÉRITE. *See* Schäffer, Ernst: Pour le Mérite. Flieger im Feuer.

POWNALL, C. A. Better engines for Navy planes.
 Scient. Amer., Vol. 145, No. 6 (Dec. 1931), New York, pp. 376-378, ills.

PRANDTL, LUDWIG. Effect of stabilizing forces of turbulence.
 National Advisory Committee for Aeronautics, Technical Memorandums No. 625, June 18, 1931, Washington, June 1931, pp. 11, diagrs.

- Einführung in die Grundbegriffe der Strömungslehre.
 Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 1. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. 1-41, ills.
- *See* Tietjens, O.: Hydro- und aeromechanik nach Vorlesungen von L. Prandtl. Band 2: Bewegung reibender Flüssigkeiten und technische Anwendungen.

PREPOSITI, CLEMENTE. La storia dell'aviazione. Vols. I, II, e III.
 Firenze, A. Vallecchi edit. tip., 1931, pp. 218; 199; 209, ill.

- La storia dell'aviazione.
 Riv. Aer., Anno 7, N. 8 (agosto 1931), Roma, pp. 378-381.

PRESSURE. *See* Gough, Melvin N.: The variation in pressure in the cabin of an airplane in flight.

- *See* Munk, Max Michael: The center of pressure. Article eight on the principles of aerodynamics.
- *See* Peters, H.: Druckmessung.
- *See* Rhode, Richard V., and Eugene E. Lundquist: The pressure distribution over a modified elliptical wing tip on a biplane in flight.
- *See* Rhode, Richard V., and Eugene E. Lundquist: The pressure distribution over a square wing tip on a biplane in flight.
- *See* Thom, A.: The pressure on the front generator of a cylinder.

PRESSURE cell. *See* Theodorsen, Theodore: Investigation of the diaphragm-type pressure cell.

PRESSURE distribution. *See* Rhode, Richard V., and Eugene E. Lundquist: Pressure distribution over the fuselage of a PW-9 pursuit airplane in flight.

PRESTON, H. E. Notes on design and construction of Gloster IV. 1927 Schneider Trophy racing seaplanes.
Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 312-317.

PRESTON, R. L. *See* Manning, W. O., and R. L. Preston: A register of civilian aircraft.

PRICOLO, FRANCISCO. Alcuni risultati delle grandi esercitazioni aeree del 1931.
Riv. Aer., Anno 7, N. 10 (ott. 1931), Roma, pp. 34-43.

PRINCE OF WALES. The Prince's home flight: The final stage of the historic flight.
Illustrated London News, Vol. 88, No. 2297 (May 2, 1931), London, p. 737, ill.

PRITCHARD, ROBERT J. Plane brokers.
Western Flying, Vol. 10, No. 3 (Sept. 1931), Los Angeles, Calif., pp. 20-22, ill.

PRIVATEER. *See* Amphibian: A diminutive amphibian.

PROBERT, RICHARD J. When the auto dealer sells planes.
Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Calif., pp. 35-36, 91.

PROCHASSON, ROGER. Le risque de l'air. Préface de m. L. Lecornu.
Paris, p. Bossuet, 1931, pp. 251.

PRODUCTION. *See* Damon, R. S.: Airplane construction production methods.

— *See* Stimson, Thomas E., jr.: Team work in production.

PRÖLL, A. Notlandung von Landflugzeugen auf See.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 22. Heft (28. Nov. 1931), München und Berlin, p. 657.

— Start und Landung fahrgestelloser Flugzeuge.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 9. Heft (15. Mai 1931), München und Berlin, pp. 255-258, illus., tabls.

PROGRESS. Technological progress in 1931. Aeronautics.
Mech. Eng., Vol. 53, No. 12 (Dec. 1931), New York, pp. 886-889.

— *See* American Society of Mechanical Engineers: Progress in aeronautics. Contributed by the Aeronautics Division.

PROJECTILES. *See* Eberhard, O. v.: Ballistik.

— *See* Epstein, Paul S.: On the air resistance of projectiles.

PROPELLERS. Balancing airplane propellers.
Scient. Amer., Vol. 144, No. 1 (Jan. 1931), New York, p. 51, ill.

— Calculation of airscrew characteristics.
Flight, No. 1156, Vol. 23, No. 8 (Feb. 20, 1931), London, pp. 168-169, diagrs.

— A flexible propeller hub.
Scient. Amer., Vol. 144, No. 2 (Feb. 1931), New York, p. 124, ill.

— Neues vom Holzpropeller.
Luftschau, 4. Jahrg., Nr. 4 (24. Feb. 1931), Berlin, p. 29.

— Variable pitch propeller.
Curtiss-Wright Review, Vol. 2, No. 2 (May 1931), New York, p. 16, ill.

— *See* Biechteler, Curt: Messung des Einflusses des Schraubenstrahls auf den Ausschlag des Seitenruders im Geradeausflug.

PROPELLERS. *See* Bonder, Julian: Quelques remarques concernant les essais de l'hélice propulsive installée obliquement dans un courant d'air.

— *See* Caldwell, Frank W.: Aspects of airscrew design.

— *See* Caldwell, Frank W.: Care of the detachable-blade, metal propeller.

— *See* Capon, R. S.: Part I.—A method of calculating suitable airscrew characteristics to meet given conditions. The resulting airscrew performance. Part II.—A comparison of the observed change of performance consequent on a change of airscrew and the change predicted by the methods of Part I.

— *See* Columba, Fausto: L'elica a passo variabile.

— *See* Dorand, René: L'amélioration des hélices et leur calcul de resistance.

— *See* Douglas, G. P., W. G. A. Perring, and R. A. Fairthorne: Wind tunnel tests with high tip speed airscrews. Experimental investigation of blade twist load.

— *See* Eula, Antonio: Sul calcolo del momento torcente aerodinamico agente sulle pale delle eliche.

— *See* Faraboschi, Alberto: Esperimenti su eliche per tutti gli stadii di funzionamento e per diversi valori del rapporto passo diametro.

— *See* Flachsbart, O.: Luftschauben.

— *See* Franz, G.: Der Voith-Schneider-Antrieb. Ein neuartiger Schiffspropeller.

— *See* Freeman, Hugh Barton: Comparison of full-scale propellers having R.A.F.-6 and Clark Y airfoil sections.

— *See* Freeman, Hugh Barton: The effect of small angles of yaw and pitch on the characteristics of airplane propellers.

— *See* Gastou, R.: L'hélice aérienne; à pas constant, à pas variable.

— *See* Glauert, H.: Airscrews for high speed aeroplanes.

— *See* Gloster: Static thrust tests of two airscrews on Gloster IIIB No. N. 195,

— *See* Gloster: Tests of experimental airscrews on Gloster IIIA.

— *See* Grzeszcyk, Szczepan: Pomiary rozkładu cisień za śmigłem.

— *See* Helicopters: Il velivolo-elicottero ad eliche orientabili.

— *See* Helmbold, H. B.: Goldstein's solution of the problem of the aircraft propeller with a finite number of blades.

— *See* Helmbold, H. B.: Über die Goldsteinsche Lösung des Problems der Luftschaube mit endlicher Flügerzahl.

— *See* Jennings, W. G.: Full scale experiments of high tip speed airscrews. Comparative performance trials of three airscrews of different sections.

— *See* Jennings, W. G., and A. Ormerod: Full scale experiments on high tip speed airscrews. The effect of thickness of section on airscrew performance.

— *See* Jones, E. T.: The distribution of pressure over a section of an airscrew blade in flight, and the variation of lift coefficient with the speed of the section.

PROPELLERS. *See* Lock, C. N. H., and H. Bateman: Airscrews at negative torque.

- *See* Lock, C. N. H.: The application of the theoretical velocity field round a spheroid to calculate the performance of an airscrew near the nose of a streamline body.
- *See* Lock, C. N. H.: The effect of body interference on the efficiency of an airscrew.
- *See* Lock, C. N. H., and A. R. Collar: Exploration of the flow near the screw proposed for the N.P.L. compressed air tunnel.
- *See* Lock, C. N. H., and F. C. Johansen: Pressure plotting a streamline body with tractor airscrew running. Part II.—Airscrew in the rear position.
- *See* Lynam, E.: Notes on the flutter of airscrew blades.
- *See* Marchetti: L'hélice a pas variable Marchetti.
- *See* Mathias, Gotthold: Einfluss der Flügelumrissform und der Quer-ruderabmessungen auf die Quersteuerbarkeit beim Eindecker.
- *See* Perring, W. G. A., and C. Callen: The influence of a stopped airscrew on the lift and drag of an aerofoil.
- *See* Pillard, M.: L'hélice "roue-libre" Paulhan-Pillard pour l'amélioration du vol avec moteur arrêté.
- *See* Pistolesi, E.: Considerazioni sul funzionamento dell'elica con tubo addizionale.
- *See* Ralli, Panida Antonio: The equilibrium of loaded impeller blades with special reference to the strength of thin metal airscrews.
- *See* Reissner, H., und Melitta Schiller: Auswertung experimenteller Untersuchungen über Luftschauben mit verdrehbaren Flügelblättern.
- *See* Seewald, Friedrich: Flutter in propeller blades.
- *See* Seewald, Friedrich: Über die Schwingungerscheinungen an Luftschauben.
- *See* Seewald, Friedrich, und Walter Feucht: Versuchsfahrten mit einem schnellfahrenden Schienenfahrzeug mit Luftschaubenantrieb.
- *See* Seguin, L. et A.: Étude des hélices, des injecteurs et des moteurs en fonctionnement par le méthode stroboscopique et par le photographie au millionième de seconde.
- *See* Seiferth, R.: Berechnung von Luftschauben und Vergleich mit Versuchsergebnissen.
- *See* Serragli, G.: Un singolare sistema di regolazione del passo delle eliche.
- *See* Stipa, Luigi: L'ala a turbina.
- *See* Stipa, Luigi: Esperienze con eliche intubate.
- *See* Stockholm: Der dritte internationale Kongress für technische Mechanik Stockholm 1930.
- *See* Turnbull, W. R.: Controllable-pitch propeller.
- *See* Walsh, Raycroft: Dependability in propellers.

PROPELLERS. *See* Webb, L. D.: Your propeller.

- *See* Weick, F. E.: Aircraft propeller design.
- *See* Williams, D. L. Hollis: The racing airscrews of 1931.
- *See* Wood, Donald H.: Full-scale tests of metal propellers at high tip speeds.
- *See* Wood, R. McKinnon, and W. G. A. Perring: Stresses and strains in airscrews with particular reference to twist.
- *See* Zhukovski, Nikolai Egorovich: Théorie tourbillonnaire de l'hélice propulsive, traduit du russe par A. Apostal . . . revu et annoté par W. Wettchinkine . . . Préface de W. Margoulis.

PROPULSION. *See* Stipa, Luigi: Aerei per voli alle alte quote.

PROSCIUTTO, A. Sulla determinazione degli angoli caratteristici dei palettamenti delle macchine a turbina.

L'Aeroteenica, Vol. 11, N. 5 (mag. 1931), Roma, pp. 571-588, daigrs. English abstract, p. 695.

PRUDDEN-WHITEHEAD. The Prudden-Whitehead monoplane. An American all-metal commercial machine.

Flight, No. 1149, Vol. 23, No. 1 (Jan. 2, 1931), London, pp. 10-11, ill.

PRYOR, EDWIN W. Wichita's municipal airport.

Aero Digest, Vol. 18, No. 4 (April 1931), New York, pp. 192-193, ill.

PTERODACTYL. Pterodactyl.

Flight, No. 1199, Vol. 23, No. 51 (Dec. 18, 1931), London, pp. 1232-1233, ills.

- *See* Kjellson, Henry: Westland-Hill's "Pterodactyl" IB.

- *See* Westland Aircraft Company: The Pterodactyl aeroplane.

- *See* Westland-Hill: The Westland-Hill pterodactyl Mark IV, aeroplane.

PUMPS. *See* L., P.: Nouvelles pompes à essence.

PUTNAM, GEORGE R. Radiobeacons and radiobeacon navigation. July 1, 1931.

Washington, Government Printing Office, 1931, pp. 42, ills., diagrs., tabls.

United States Bureau of Lighthouse Service.

PUTNAM, L. L. The aviation accounting system.

Chicago, Tallman, Robbins & Company, 1931.

- Too much money or too little—both bad.

Airway Age, Vol. 12, No. 5 (May 2, 1931), New York, pp. 481-484.

PYE, D. R. Compression-ignition engines. The history and development of heavy-oil engines with a section on future progress.

Aircraft Engineering, Vol. 3, No. 24, 25 (Feb., March, 1931), London, pp. 35-38, 70-72, ills., diagrs.

- The limits of compression ratio in Diesel engines.

Aer. Res. Comm., Rep. Mem., No. 1365 (E. 45-I. C. E. 787), November 1930, London, 1931, pp. 9, diagrs., tabl.

- The origin and development of heavy-oil aero engines.

Journ. Roy. Aer. Soc., Vol. 35, No. 244 (April 1931), London, pp. 286-298, ills., diagrs.

PYNCHES, T. LE G. Aircraft armament.

Aeroplane, Vol. 40, No. 25 (June 24, 1931), London, pp. 1210, 1214, 1216, 1218, 1220, ills.

Q

QUINDRY, FRANK E. Aerial bombardment of civilian and military objectives.
Journal of Air Law, Vol. 2, No. 4 (Oct. 1931), Chicago, pp. 474.

R

RABBITT, P. J. The second year at the airport for the Nation's Capital.
U.S. Air Services, Vol. 16, No. 4 (April 1931), Washington, p. 43.

RACES. A month of races.

Western Flying, Vol. 10, No. 3 (Sept. 1931), Los Angeles, Calif., p. 27, ports.

— Speed and the races.

Western Flying, Vol. 10, No. 2 (Aug. 1931), Los Angeles, Calif., pp. 26-74, ports., ills.

— See King's Cup: The King's Cup race.

— See National Air Races: 236 M.P.H.

— See Wait, William, jr.: The value of air races.

RADCLIFFE, FRANK. Technical features of the air mail.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1157, 1161, Vol. 23, No. 9, 13
(Feb. 27, March 27, 1931), London, pp. 184d-184f (12-14), 272e-272g (21-23), maps.

RADIATORS. See Castagna, A.: Prove su radiatori per motori di aviazione.

— See Harris, R. G., L. E. Caygill, and R. A. Fairthorne: Wind tunnel experiments on steam condensing radiators.

— See Harris, R. G., L. E. Caygill, and R. A. Fairthorne: Wind tunnel tests on Gloster and Supermarine wing radiators.

— See Jones, E. T.: Drag and heat dissipation of three radiator systems.

— See Supermarine: Advance results of wind tunnel tests on supermarine wing radiator.

RADIO. Jämförelse mellan olika system för navigation av flygplan medelst radio.

Flygning, Årg. 9, N:R 11 (Nov. 1931), Stockholm, pp. 229-230, diagr.

— A new airplane radio device.

Science, Vol. 74, No. 1919 (Oct. 9, 1931), New York, pp. 14.

— Radjostacja lotnicza typu A.D. 8.

Instytut Badań Technicznych Lotnictwa, Sprawozdania i Prace, Warszawa, 1926, pp. 35-38,
ills., diagr.

— I servizi radiometeorici d'aeronautica. Indicazione abbreviata R.T.M.
Ore del tempo medio Europa centrale. Seconde edizione. Parte I. (Ministero dell' aeronautica. Direzione generale dei servizi del materiale e degli aeroporti).

Roma, Instit. poligraf. dello Stato edit. tip., 1931, pp. 34.

— See Bell Telephone Laboratories: Aircraft radio development.

— See Boone, Andrew R.: Recent developments in radio fog flying.

— See Bouman, L. F.: Een nieuwe koers in de ontwikeling der radio op vliegtuigen.

— See Brown, Thad H.: State regulation of radio.

— See Bylewski, Jerzy: Badanie fal krótkich przeprowadzone przez Instytut Badań Technicznych Lotnictwa wspólnie z Instytutem Radjotechnicznym.

RADIO. *See* Bylewski, Jarzy: Druga serja badań fal krótkich, przeprowadzona przez Instytut Badań Technicznych Lotnictwa wspólnie z Instytutem Radiotechnicznym.

— *See* Cassidy, Louis C.: Does the Havana aerial convention fulfill a need?

— *See* Claxton, Brooke: Legislative control of radio in Canada.

— *See* Davies, Gomer Lewis: Theory of design and calibration of vibrating-reed indicators for radio range beacons.

— *See* Denmark: Instruks for bevægelige radiostationer om bord i skibe eller luftfartøjer. April 1930.

— *See* Diamond, Harry, and Gomer Lewis Davies: Characteristics of airplane antennas for radio range-beacon reception.

— *See* Donovan, William J.: Origin and development of radio law.

— *See* Dunmore, Francis Winkley: A course indicator of pointer type for the visual radio range-beacon system.

— *See* Eddy, Myron Fish: Aircraft radio.

— *See* Eredia, Filippo: Sulla meteorologia radiotelegrafica.

— *See* Fog: Landning i dimma med radiotekniska hjälpmmedel.

— *See* Germany: Verleihungsbedingungen und Verleihungsverfahren im Flugfunkdienst.

— *See* Gross, Gerald C.: Aviation radio in Europe.

— *See* Hinman, W. S., Jr.: Automatic volume control for aircraft.

— *See* Hoover, Herbert Jr.: Radio on the world's airlines.

— *See* Kear, Frank Gregg., and Gerald Hiles Wintermute: A simultaneous radio-telephone and visual range beacon for the airways.

— *See* Lansdowne, Beran: Radio—How to install it on aircraft.

— *See* Montagnes, James: Largest short-wave operator in Canada.

— *See* Musella, Francesco: Disciplina delle radiocomunicazioni nella navigazione aerea.

— *See* Musella, Francesco: La radiogoniometria nella navigazione aerea.

— *See* Musella, Francesco: Rete radiotelegrafica terrestre per la navigazione aerea.

— *See* Sokolcow, Dymitry, i Jerzy Bylewski: Wyniki 2 serji badań nad rozchodziением się fal krótkich.

— *See* Strijkers, A.: Radioproeven op de Holland—Indië route.

— *See* United States Department of Commerce, Aeronautics Branch: Second report of liaison committee on aeronautical radio research. October 15, 1931.

— *See* Willets, H. N.: Radio for airports.

— *See* Wireless.

— *See* Young, H. E.: Radio for the private owner.

RADIOBEACONS. *See* Ide, John Jay: The Loth system of navigation by rotating radio beacons.

— *See* Putnam, George R.: Radio beacons and radiobeacon navigation.

RAFFAELLI, ITALO. Apparati motori a vapore per la navigazione stratosferica. *Riv. Aer.*, Anno 7, N. 9 (sett. 1931), Roma, pp. 411-416, ill., diagrs.

— Apparecchio Ba/33 con [motore] Lynx suralimentato. *Riv. Aer.*, Anno 7, N. 11 (nov. 1931), Roma, pp. 319-321.

— L'autonomia del "Mystery S." *Riv. Aer.*, Anno 7, N. 7 (luglio 1931), Roma, pp. 1-4, ill.

— Profili alari seghettati. *Riv. Aer.*, Anno 7, N. 12 (dic. 1931), Roma, pp. 452-455, diagrs.

RAHSKOPFF, H. Luftsport-Verbände in der Tschechoslowakie. *Luftschau*, 4. Jahrg., Nr. 6 (24. März 1931), Berlin, p. 43.

RALLI, PANDIA ANTONIO. The equilibrium of loaded impeller blades with special reference to the strength of thin metal airscrews. *Journ. Roy. Aer. Soc.*, Vol. 35. No. 242 (Feb. 1931), London, pp. 121-166, diagrs., tabls.

RAMSEY, LOGAN C. Aircraft instruments as a safety factor. *Aero Digest*, Vol. 18, No. 1 (Jan. 1931), New York, pp. 41, 148, ill.

— The pilot and his air speed meter. *Aero Digest*, Vol. 18, No. 2 (Feb. 1931), New York, pp. 48-49, 146, ill., diagrs.

— The pilot and his aircraft compass. *Aero Digest*, Vol. 18, No. 4 (April 1931), New York, pp. 54-55, 226, ill.

— The pilot and his altimeter. *Aero Digest*, Vol. 18, No. 3 (March 1931), New York, pp. 47, 128-132, ill.

— The pilot and the compass error. *Aero Digest*, Vol. 18, No. 5 (May 1931), New York, pp. 58-59.

RANDALL, C. E. The airplane aids the forester. *Nat. Aer. Mag.*, Vol. 9, No. 2 (Feb. 1931), Washington, pp. 29-35, ill.

RANDOLPH, ELLEN. "West Point of the air." *Western Flying*, Vol. 10, No. 5 (Nov. 1931), Los Angeles, Cal., pp. 16-18, ill.

RANDOLPH FIELD. *See* United States Congress. House. Committee on Military Affairs: Appropriation for construction at Randolph Field, San Antonio, Texas. Report to accompany H.R. 14912.

RASMUSSEN, ERIK. *See* Vitt, Leonard: Flygarprofiler Erik Rasmussen.

RATHERT, G. A. An efficiency formula for cargo airplanes. *Journ. Soc. Automotive Engineers*, Vol. 29, No. 3 (Sept. 1931), New York, pp. 241-252.

RAVEN, E. Vom Freiballon, Fortschritt, Handikap und dem fehlenden Gordon-Bennett-Ballon. *Luftschau*, 4. Jahrg., Nr. 7 (10. April 1931), Berlin, p. 52.

RAVENS. *See* Tåning, A. Vedel: Ravens flying upside-down.

RAWSON, A. H. *See* Sanders, C. J., and A. H. Rawson: The book of the C. 19 autogiro; the principle of operation described together with notes on running and maintenance.

REA, COURTS D. 10 months' aircraft exports, 1930. *Aero Digest*, Vol. 18, No. 2 (Feb. 1931), New York, pp. 52, 122.

RECHTLICH, ARVED. Grundlagen für die Konstruktive Anwendung und Ausführung von Stahlrohrschweisungen im Flugzeugbau.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V. München und Berlin, 1931, pp. 379-438, ills., diagrs., tabls.

RECORDS. Four hundred miles an hour.

Aeroplane, Vol. 41, No. 15 (Oct. 7, 1931), London, pp. 860-862.

G. H. Stainforth raised his own speed record.

— Nouveaux records d'aviation légère.

L'Aéronautique, 13me année, No. 143 (avril 1931), Paris, p. 116, ill.

— Nouveaux records homologués par la F. A. I.

Bull. Féd. Aér. Int., 12e année, No. 44, 45, 46-47 (Jan., avril, juil.-oct. 1931), Paris, pp. 21-23, 41-42, 114-116, ills.

Bossoutrot et Ross.

Auguste Piccard, Paul Kipfer, W. E. Less et J. A. Bossy, Lebrix et Doret.

— Les nouveaux records de durée et de distance en circuit.

L'Aéronautique, 13me année, No. 143 (avril. 1931), Paris, pp. 115-116, ill.

— Records officiels au 31 décembre 1930. Records du monde. Records du monde avec ravitaillement en vol. Records internationaux par classe.

Bull. Féd. Aér. Int., 12e année, No. 44, 45 (jan., avril 1931), Paris, pp. 26-32, 45-51.

— Records officiels au 1er octobre 1931. Records du monde. Records du monde avec ravitaillement en vol. Records internationaux par classe.

Bull. Féd. Aér. Int., 12e année, No. 46-47 (juil.-oct. 1931), Paris, pp. 117-124.

— Rekorde. Stand der von der F. A. I. anerkannten internationalen Flugzeug-Rekorde am 1. Januar 1931.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 1. Heft (14. Jan. 1931), München und Berlin, pp. 32-34, tabl.

— Some more new records.

Flight, No. 1163, Vol. 23, No. 15 (April 10, 1931), London, p. 314, ills.

— Tableaux des records d'aviation homologués par la F. A. I. au 1er janvier 1931.

L'Aéronautique, 13me année, No. 140 (jan. 1931), Paris, supplément I. Classe C.—Avions. II. Classe Cbis.—Hydravions.

— Two new records. Duration and distance (closed circuit) by Lalouette and Reginensi.

Flight, No. 1161, Vol. 23, No. 13 (March 27, 1931), London, p. 265, ills.

— World's records in aviation.

Flight, No. 1160, Vol. 23, No. 12 (March 20, 1931), London, p. 247.

— See Fairey, M. C. R.: Considérations sur avions de records et avions militaires.

— See Hirschauer, Louis: N'y a-t-il pas trop de records du monde?

— See Jaffeux-Tissot, M.: Après les records de durée et de distance.

REFUELING. See Larrard, J. H. B.: The refuelling of aircraft in flight.

REGIA AERONAUTICA. The triumph of the Regia Aeronautica.

Aeroplane, Vol. 40, No. 2 (Jan. 14, 1931), London, pp. 58, 60.

— See Brazil: The Regia Aeronautica in Brazil.

REGULATIONS. See Laws and regulations.

REID, ANDREW. Merchandising needs.

Airway Age, Vol. 12, No. 3 (Mar. 1931), New York, pp. 265-268, ills.

REID, T. M. Winter flying in northern Canada.
Aviation, Vol. 30, No. 6 (June 1931), New York, p. 364, ill.

REID-SIGRIST. The Reid-Sigrist turn indicator.
Flight, No. 1186, Vol. 23, No. 38 (Sept. 18, 1931), London, pp. 953-954, ill.

— See Blind flying: A new instrument for blind flying. The Reid-Sigrist Turn Indicator.

REISSNER, H., und MELITTA SCHILLER. Auswertung experimenteller Untersuchungen über Luftschauben mit verdrehbaren Flügelblättern.
Zeitschr., Flugt. Motorluftsch., 22. Jahrg., 18. Heft (28. Sept. 1931), München und Berlin, pp. 551-557, diagrs., tabs.

RELF, E. F. Aerodynamic research in 1930. The progress made during the year with special reference to wind tunnel design and fluid flow.
Aircraft Engineering, Vol. 3, No. 23 (Jan. 1931), London, pp. 13-14, ill.

— Design of wind tunnels.
Aircraft Engineering, Vol. 3, No. 24 (Feb. 1931), London, pp. 27-28.

RENNIE, J. D. The development of the long-range flying boat.
Flight, No. 1167, 1168, Vol. 23, No. 19, 20 (May 8, 15, 1931), London, pp. 413-416, 434-437, ill., diagrs.

RENTSCHLER, FREDERICK B. Glancing back at 1930. The aircraft industry.
Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Cal., p. 38.

— Importance of uniform aeronautic regulatory laws to the aircraft industry.
U.S. Air Services, Vol. 16, No. 1 (Jan. 1931), Washington, pp. 32-34.

— National conference on uniform aeronautic regulatory laws. Importance of uniform aeronautic regulatory laws of the aircraft industry.
Air Law Review, Vol. 2, No. 2 (April 1931), New York, pp. 222-228.

RES ipsa loquitur. See Osterhout, Howard: The doctrine of *res ipsa loquitur* as applied to aviation.

RESEARCH. See Klemin, Alexander: Recent aircraft engineering research.

— See Larner, L., and J. Ackeret: Aeronautical education and research at the Swiss Institute of Technology in Zurich.

RESISTANCE. See Epstein, Paul S.: On the air resistance of projectiles.

— See Huber, Maksymilian T.: Nowoczesne wzory wytrzymałości złożonej.

— See Muttray, H.: Widerstand und Kühlwirkung eines Flugzeugrumpfes mit verschieden angeordnetem Kühler.

— See Pasqualini, Clodoveo: La resistenza dell'aria per corpi sferici rotanti a velocità prossima a quella del suono.

— See Schiller, L., and R. Herman: Resistance of plates and pipes at high Reynolds numbers.

RESNIER, ANDRÉ GUILLAUME. See Lemoing, C.: Le premier vol sans moteur vers 1806 à Angoulême.

REYNOLDS. See Dupin, P., et Trissé-Solier: Hydrodynamique.—Sur les tourbillons alternés de Benard-Karman et la loi de similitude dynamique de Reynolds.

REYNOLDS, AUSTYN. Seamless steel tubes for aircraft. A description of the manufacturing processes employed with a discussion on materials and their qualities.

Aircraft Engineering, Vol. 3, No. 28 (June 1931), London, pp. 141-143, ill.

RHODE, RICHARD V., and EUGENE E. LUNDQUIST. Applied load factors in bumpy air. A preliminary study in the light of the meteorological data at present available.

Aircraft Engineering, Vol. 3, No. 30 (Aug. 1931), London, pp. 197-200, diagrs.

RHODE, RICHARD V. The place of pressure distribution tests in structural design.

Aviation, Vol. 30, No. 2 (Feb. 1931), New York, pp. 98-101, ills.

RHODE, RICHARD V., and EUGENE E. LUNDQUIST. Preliminary study of applied load factors in bumpy air.

National Advisory Committee for Aeronautics, Technical Notes No. 374, April 30, 1931, Washington, April 1931, pp. 30, diagrs., tabls.

— The pressure distribution over a modified elliptical wing tip on a biplane in flight.

National Advisory Committee for Aeronautics, Technical Notes No. 387, Aug. 28, 1931, Washington, August 1931, pp. 14, diagrs., tabls.

— The pressure distribution over a semicircular wing tip on a biplane in flight.

National Advisory Committee for Aeronautics, Technical Notes No. 379, May 26, 1931, Washington, May 1931, pp. 14, diagrs., tabls.

— The pressure distribution over a square wing tip on a biplane in flight.

National Advisory Committee for Aeronautics, Technical Notes No. 360, Jan. 13, 1931, Washington, January 1931, pp. 22, diagrs., tabls.

— Pressure distribution over the fuselage of a PW-9 pursuit airplane in flight.

National Advisory Committee for Aeronautics, Report No. 380, May 16, 1931, Washington, U.S. Government Printing Office, 1931, pp. 29, ills., diagrs., tabls.

RHODE, RICHARD V. The pressure distribution over the wings and tail surfaces of a PW-9 pursuit airplane in flight.

National Advisory Committee for Aeronautics, Report No. 364, Jan. 26, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 103, ills., diagrs., tabls.

RHODE, RICHARD V., and EUGENE E. LUNDQUIST. Strength tests on paper cylinders in compression, bending, and shear.

National Advisory Committee for Aeronautics, Technical Notes No. 370, April 7, 1931, Washington, April 1931, pp. 14, ills., diagrs., tabls.

RHODESIA. Nord-Rhodesian, Sperrgebiete.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 13-14 (4. April 1931), Berlin, p. 91.

— Süd-Rhodesien. Gesetz.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 13-14 (4. April 1931), Berlin, pp. 91-92.

— See Cochran-Patrick, C. K.: Aerial reconnaissance mapping in northern Rhodesia.

RHÖN. Auch die "12. Rhön 1931" überaus erfolgreich! Von Segelflugzeugen, Führern und Oberleitung.

Luftschau, 4. Jahrg., Nr. 15 (10. Aug. 1931), Berlin, pp. 30-32.

— Rhön-zauber; segelflieger-erinnerungen; unter mitwirkung bedeutender und unbedeutender Rhön- und Rossitten-Indianer und sonstigen segelflieger-Germanen.

Frankfurt a. M., Verlag "Flugsport", 1931, pp. 43, ills.

— Le vol à voile à la Rhön et en France.

L'Aéronautique, 13me année, No. 149 (oct. 1931), Paris, pp. 344-346, ills.

— See Georgii, Walter: Bericht über den 11. Rhön-Segelflug-Wettbewerb.

RHÖN. *See* Georgii, Walter: Eleventh Rhön soaring-flight contest.

— *See* Maas, H. J. van der: Bezoek aan Rossitten en wasserkuppe.

— *See* O'Meara, J. K. (Jack): The 1931 Rhoen soaring contest at the Wasserkuppe.

— *See* Plath, Erich: Eindrücke vom 12. segelflugwettbewerb auf der Rhön.

RHÖN-ROSSITTEN-GESELLSCHAFT. Richtlinien für den bau von gleit- und segelflugzeugen, bearbeitet von der Technischen Kommission der Rhönsegelflugwettbewerbe unter mitwirkung von W. Coulmann, Karl Haarmann, Anton Holtmann, Alexander Lippisch, Edmund Pfister, Max v. Pilgrim.

Frankfurt am Main, Selbstverlag der R. R. G., 1931, pp. 27 ills., tabls.

— *See* Georgii, Walter: Veröffentlichungen des Forschungs-Instituts der Rhön-Rossitten-Gesellschaft e. V. Nr. 4: Jahrbuch 1929 und Abhandlungen der I. Wissenschaftlichen Segelflugtagung.

RIBS. *See* Haley, R.: Setting out taper ribs.

RICARDO, HARRY R. The high-speed internal-combustion engine.

London, Glasgow and Bombay, Blackie and Son., Ltd., 1931, pp. vi, 435.

RICCI, ADELINA. La crociera atlantica delle ali italiane 1930-1931.

Casale Montferrato, Tipografia cav. G. G. Lavagno, 1931, pp. 8.

RICHARDSON, EDWARD GICK. Circulation round a rotating cylinder in a viscous fluid.

Philosophical Magazine, Vol. 11, No. 74 (June 1931), London, pp. 1215-1220.

— Flow of air adjacent to the surface of a rotating cylinder in a stream.

Aer. Res. Comm., Rep. Mem., No. 1368 (Ae. 495-T. 3049), December 1930, London, 1931, pp. 12, ills., diagrs., tabls.

— Jet propulsion for aircraft.

Journ. Roy. Aero. Soc., Vol. 35, No. 241 (Jan. 1931), London, pp. 29-36, ills., diagrs.

— Re jet propulsion.

Journ. Roy. Aer. Soc., Vol. 35, No. 244 (April 1931), London, pp. 338-339.

RICHARDSON, JAMES MONROE. Man's wings—how to fly in word and picture.

Chicago, The Reilly & Lee Co., 1931, pp. 107, ills.

Drawings by John McCormick.

RICHARDSON, PHIL. Lieut. Westley wins Patrick trophy race.

Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, p. 101.

RICHTHOFEN, BARONE VON. *See* Scaroni, Silvio: Commento alle "Memorie" del Barone von Richthofen.

RICKENBACKER, EDWARD V. The spirit of armistice.

U.S. Air Services, Vol. 16, No. 12 (Dec. 1931), Washington, D.C., pp. 28-29.

RIDDER, E. I. DE. The use of elektron metal in airplane construction.

National Advisory Committee for Aeronautics, Technical Memorandums No. 608, Feb. 28, 1931, Washington, February 1931, pp. 22, ills., tabls.

RIGGING. *See* Great Britain. Air Ministry: A manual of rigging for aircraft.

RIJKS-STUDIEDIENST VOOR DE LUCHTVAART. *See* Amsterdam: De Rijks-Studiedienst voor de Luchtvaart, Amsterdam. Verlag over het jaar 1930.

RINGS. *See* Cowling.

RINGS. *See* Engel, John H.: Rings—How to install them.

— *See* Townend, H. C. H.: A study of slots, rings & boundary layer control by blowing.

— *See* Townend, H. C. H.: A study of slots, rings and jet control of the boundary layer.

RITCHIE, H. C. New airport lighting development.

Airway Age, Vol. 12, No. 3 (Mar. 1931), New York, pp. 255-253, illus.

RITTER, HANS. Post-war fighter progress.

Aviation, Vol. 30, No. 12 (Dec. 1931), New York, pp. 692-694, diagrs.

RIVETED JOINTS. *See* Weiss, Stanisław: Połączenia nitowe duraluminjowe.

RIVETS. *See* Bradfield, F. B., and F. W. G. Greener: Wind tunnel test of the increased drag of a quarter scale float on adding rivets.

— *See* Langley, M.: On solid rivets.

ROBERTS, WILLIAM W. Showmanship and sanity.

Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Cal., pp. 44-45.

ROBERTSON, F. A. DE V. The air exercises.

Flight, No. 1178, 1179, Vol. 23, No. 30, 31 (July 24, 31, 1931), London, pp. 732-733, 764-769, illus.

— A brief outline of the growth of British air power from the balloon company of the Royal Engineers to the present day Royal Air Force.

Flight, No. 1174, Vol. 23, No. 26 (June 26, 1931), London, pp. 581-606, illus.

— The Central Flying School.

Flight, No. 1177, Vol. 23, No. 29 (July 17, 1931), London, pp. 681-686, illus.

— The end of the historic contest. Schneider trophy won by Great Britain.

Flight, No. 1186, Vol. 23, No. 38 (Sept. 18, 1931), London, pp. 933-942, illus.

— Mount Batten Nos. 204 and 209 (flying boat) squadrons.

Flight, No. 1172, Vol. 23, No. 24 (June 12, 1931), London, pp. 527-535, illus.

— No. 101 (Bomber) squadron.

Flight, No. 1165, Vol. 23, No. 17 (April 24, 1931), London, pp. 353-357, illus.

— No. 600 (City of London) (Bomber) squadron.

Flight, No. 1182, Vol. 23, No. 34 (Aug. 21, 1931), London, pp. 834-836, illus.

— Schneider teams at Calshot.

Flight, No. 1184, 1185, Vol. 23, No. 36, 37 (Sept. 4, 11, 1931), London, pp. 876-877, 909-913, illus.

ROBINSON, WILLIAM. Heavy-oil engines of Akroyd type; being developments of compression-ignition oil engines, including modern applications to land purposes, marine and airship propulsion, and railway traction.

London and Glasgow, Blackie & Son, Ltd., 1931, pp. xiii, 142, illus., diagrs.

ROBUR. Den Svenska fallskörmen "Robur".

Flygning, Årg. 9, N:R 6 (Juni 1931), Stockholm, pp. 121-122, illus.

ROCCA, CARLO. Posta aerea.

Riv. Aer., Anno 7, N. 1 (gen. 1931), Roma, pp. 58-67.

— Le tariffe di posta aerea e la convenienza della loro moderazione.

Riv. Aer., Anno 7, N. 6 (giugno 1931), Roma, pp. 451-487, tabls.

ROCHÉ, J. A. Engineering, 1930-31. A comprehensive review of development in the last year with some forecast as to its effect on achievement looked to in 1931.

Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 30, 32, 34, illus.

ROCHFORD, DANIEL. Twenty thousand memorable miles over Pan American skyways.
Nat. Aer. Mag., Vol. 9, No. 3 (March 1931), Washington, pp. 9, 12, 21-23, ills.

ROCKET power. Espenlaub Rak. I. Schwanzloses Versuchsflugzeug mit Raketenantrieb.
Luftschau, 4. Jahrg., Nr. 11 (10. Juni 1931), Berlin, p. 82, ill.

ROCKETS. Raketenflug.
Die Umschau, 35. Jahrg., Heft 18 (2. Mai 1931), Frankfurt a.M., pp. 351-352, ills.

— See Baumgarten-Crusius, Artur: Die rakete als weltfriedenstaube.

— See Biermann, Gerd: Weltraumschiffahrt? Eine kurze studie des problems.

— See Heinze, Edwin P. A.: Experiments with rockets.

— See Lasser, David: The conquest of space.

— See Ley, Willy: Die fahrt ins weltall.

— See Noordung, Hermann: Das problem der befahrung des weltraums; der raketenmotor.

RODGER, R. Limits, fits and allowances.
Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1200, Vol. 23, No. 52 (Dec. 25, 1931), London, pp. 1264f-1264g (94-95), tabls.

RODS. See Huber, T.: Obciążnie krytyczne prętów osiowo ściskanych o przekroju nieciągle zmiennym.

ROGERS, BOGART. See Eaker, Ira C.: What's the matter with Mr. Rogers.

ROGERS, LEIGHTON. Value of exports continues high.
Airway Age, Vol. 12, No. 2 (Feb. 1931), New York, pp. 169-170, tabls.

ROGERS, LEIGHTON W. American aeronautics abroad.
Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 43-44.

— Analysis of aviation exports.
Aero Digest, Vol. 18, No. 4 (April 1931), New York, pp. 45, 232, port.

ROHLFING, CHARLES CARROLL. National regulation of aeronautics.
Philadelphia, University of Pennsylvania Press; London, H. Milford, Oxford University Press, 1931, pp. ix, 298, ills., maps, diagrs. Thesis (Ph. D.) University of Pennsylvania.

ROLAND-GARROS. See Touring: L'activité du Roland-Garros.

ROLINSON, D. Take-off and landing of aircraft.
Aer. Res. Comm., Rep. Mem., No. 1406 (Ae. 527-T. 2980, "a" and "b"), June 1931, London, 1931, pp. 25, ills., diagrs., tabls.

— See Kerr, P. S.: Fuel flowmeters designed to measure mass flow.

ROLL. See Schmeidler, Werner: Eine Formel für das Rollmoment bei Tragflügeln.

ROLLIN, VERN GORDON. See Schey, Oscar William, and Vern G. Rollin: The effect of increased carburetor pressure on engine performance at several compressed ratios.

ROLLS-ROYCE. The home of Rolls-Royce engines.
Flight, No. 1194, Vol. 23, No. 46 (Nov. 13, 1931), London, pp. 1127-1129, ills.

— The Rolls-Royce racing engine.
Flight, No. 1188, No. 23, No. 40 (Oct. 2, 1931), London, pp. 989-994, ills.

ROLLS-ROYCE. The Rolls-Royce racing engine. A description of the experimental and development work involved in its evolution.

Aircraft Engineering, Vol. 3, No. 32 (Oct. 1931), London, pp. 244-246, ills.

— See Handasyde, G. H.: Rolls-Royce aero-engines. Reasons for the high standard of workmanship and efficiency at derby.

ROLLS-ROYCE limited. Modern aircraft fitted with Rolls-Royce engines. Avions modernes équipés de moteurs Rolls-Royce. Aviones modernos equipados con motores Rolls-Royce.

London, Rolls-Royce limited, 1931, 1 vol., ills.

ROMAN law. See Lardone, Francesco: Airspace rights in Roman law.

RONDE, HANS, und FRHR. von MAHS. Der Luftschutz, von Hans Ronde, Der Kollektivschutz der Bevölkerung gegen Luftangriffe und die Sicherung lebenswichtiger Betriebe, von Frhr. von Mahs.

Berlin, Selbstverlag des Reichsverbandes der Deutschen Industrie, 1931, pp. 62.

R. 100. Breaking up R. 100.

Flight, No. 1198, Vol. 23, No. 50 (Dec. 11, 1931), London, pp. 1210-1212, ills.

— See Airships: Our last airship. R. 100.

— See Norway, N. S.: R. 100 Canadian flight 1930. Journal written on board the ship. Nothing has been added.

R.101. Cause of the loss of R. 101. Conclusions of the Court and a summary of investigations made at the National Physical Laboratory. Experiments and calculations carried out at the National Physical Laboratory (Prepared by Professor C. E. Inglis).

Aircraft Engineering, Vol. 3, No. 27 (May 1931), London, p. 117-121, diagrs., tabls.

— El informe pericial sobre el accidente del "R 101." Ibérica, Año 18, Núm. 887 (18 julio 1931), Barcelona, pp. 56-57.

— Is de "R. 101" in de lucht gebroken? Het Vliegveld, 15de Jaarg., No. 12 (Dec. 1931), Amsterdam, p. 420.

— The lessons of R. 101. Some matters requiring investigation. Aircraft Engineering, Vol. 3, No. 27 (May 1931), London, pp. 103-104.

— The loss of the airship R. 101. Nature, Vol. 127, No. 3208 (April 25, 1931), London, pp. 617-619.

— The loss of the R. 101. Engineering, Vol. 131, No. 3404 (April 10, 1931), London, pp. 487-488.

— On the report on the R. 101. Aeroplane, Vol. 40, No. 14 (April 8, 1931), London, pp. 589-592, 594, 596.

— Report of the R. 101. Presented to the Secretary of State for Air to Parliament by command of His Majesty, March 1931. London, His Majesty's Stationery Office, 1931, pp. 129, ills., diagrs., tabls., charts. Parliament. Papers by command Cmd. 3825.

— R. 101 Simon inquiry report. Disaster due to loss of gas. Flight, No. 1162, Vol. 23, No. 14 (April 3, 1931), London, pp. 290-291.

— The Simon report on R. 101. Flight, No. 1162, Vol. 23, No. 14 (April 3, 1931), London, pp. 285-286.

— See Ajalbert, Jean: Le R-101 sur Beauvais, route des Indes; préface de Lucien Lainé.

R. 101. *See* Great Britain: Report of the R. 101 inquiry. Presented by the Secretary of State for Air to Parliament by command of His Majesty, March 1931.

— *See* Jones, R., and A. H. Bell: Biplane fins on a model of R. 101.

— *See* Spanner, Edward Frank: The tragedy of "R 101."

— *See* Williams, D. H., and A. R. Collar: Motion of H. M. A. R. 101 under certain assumed conditions.

ROOSEVELT FIELD. Roosevelt field.
Airport Section, Western Flying, Vol. 10, No. 1 (July 1931), Los Angeles, Cal., pp. 69-70, ill.

Roots. *See* Oestrich, Hermann: Untersuchung eines Flugmotoren-Geblases, Bauart Argus-Roots.

ROPER, ALBERT. La Convention internationale du 13 octobre 1919 portant réglementation de la navigation aérienne. Son origine. Son application. Son avenir.
Paris, Recueil Sirey, 1930, pp. viii, 379.

Rose, Don. The blind spot.
Aero Digest, Vol. 19, No. 6 (Dec. 1931), New York, pp. 29, 99.

— The traffic of tomorrow.
Aero Digest, Vol. 18, No. 3 (March 1931), New York, pp. 38, 120-122.

— Wings of the Army.
Aero Digest, Vol. 19, No. 1 (July 1931), New York, pp. 35, 118.

— *See* Cierva, Juan de la, and Don Rose: Wings of tomorrow; the story of the autogiro.

Roseck, ERICH. Segelflygning—Tysklands nyaste sport.
Flygning, Årg. 9, N:R 9 (Aug. 1931), Stockholm, pp. 161-162, ill.

ROSENBLATT, ALFRED. Hydrodynamique.—Sur la stabilité des mouvements laminaires des liquides visqueux incompressibles.
C. R. Acad. Sci., T. 193, No. 4 (27 juil. 1931), Paris, pp. 220-222.

— Meccanica.—Sur le stabilité des mouvements laminaires des liquides visqueux.—III. Convergence de l'algorithme.
Atti della Accademia Nazionale dei Lincei, Anno 328, 1931 (IX), Serie 6. Rendiconti Vol. 14, Fasc. 9, Roma, 1931, pp. 279-284.

ROSENDAHL, CHARLES EMERY. Up ship!
New York, Dodd, Mead and Company, 1931, pp. xiv, 311, ills.

ROSENHAIN, W., J. D. GROGAN, and T. H. SCHOFIELD. Gas removal and grain refinement in aluminum alloys.
Aer. Res. Comm., Rep. Mem., No. 1387 (M. 72.—A. 81.), January 1930, London, 1931, pp. 8, ills., diagr., tabl.

— The influence of Titanium Tetrachloride on cast aluminium alloys.
Aer. Res. Comm., Rep. Mem., No. 1386 (M. 71-A. 77), November 1929, London, 1931, pp. 10, ills., tabls.

ROSENKRANZ, HANS. Ferdinand graf von Zeppelin; die geschichte eines abenteuerlichen lebens.
Berlin, Ullstein, 1931, pp. 205, ills.

Ross, C. A. *See* Bridgeman, O. C., C. A. Ross and H. S. White: Airplane fuel-line temperature.

Ross, E. W. Itinerant flying schools.

Airway Age, Vol. 12, No. 10 (Jun. 6, 1931), New York, pp. 589-590, ill.

— Prospects must have service.

Airway Age, Vol. 12, No. 4 (Apr. 1931), New York, pp. 367-369, ill.

Ross, LOUIS F. Servicing shock absorber struts.

Aviation, Vol. 30, No. 8 (Aug. 1931), New York, pp. 477-478, ill.

ROSS, MALCOLM HARRISON. Sailing the skies; gliding and soaring.

New York, The Macmillan Company, 1931, pp. xiv, 276, ill.

ROSSI. *See* B. H.: Les records de distance et de durée sur circuit, en avion.

ROTA, AUGUSTO. Raccolta delle sue opere (1919-1922) eseguita per iniziativa e cura del Ministero dell'Aeronautica e col concorso del Ministero della Marina.

Roma, Società Anonima Poligrafica Italiana, 1931, pp. 135, ill., diagrs., tabls.

ROTATING cylinder. *See* Thom, A.: Experiments on the flow past a rotating cylinder.

ROTH, B. Air branch of New York state police.

Aero Digest, Vol. 19, No. 5 (Nov. 1931), New York, p. 71.

ROTHROCK, ADDISON M. Combustion in a high-speed compression-ignition engine.

National Advisory Committee for Aeronautics, Report No. 401, Jan. 16, 1932, Washington, U.S. Government Printing Office, 1931, pp. 17, ill., diagrs.

— Effect of high air velocities on the distribution and penetration of a fuel spray.

National Advisory Committee for Aeronautics, Technical Notes No. 376, May 9, 1931, Washington, May 1931, pp. 10, ill., diagrs.

ROTHROCK, ADDISON M., and E. T. MARSH. The effect of injection-valve opening pressure on spray-tip penetration.

National Advisory Committee for Aeronautics, Technical Notes No. 384, July 27, 1931, Washington, July 1931, pp. 4, diagrs.

ROTHROCK, ADDISON M. Hydraulics of fuel injection pumps for compression-ignition engines.

National Advisory Committee for Aeronautics, Report No. 396, Nov. 28, 1931, Washington, U.S. Government Printing Office, 1931, pp. 48, ill., diagrs., tabls.

— The N.A.C.A. apparatus for studying the formation and combustion of fuel sprays and the results from preliminary tests.

National Advisory Committee for Aeronautics, Technical Notes No. 389, Sept. 2, 1931, Washington, September 1931, pp. 22, ill., diagrs., tabls.

ROTHROCK, ADDISON M., and E. T. MARSH. Penetration and duration of fuel sprays from a pump injection system.

National Advisory Committee for Aeronautics, Technical Notes No. 395, Oct. 20, 1931, Washington, October 1931, pp. 16, ill., diagrs.

ROTHROCK, ADDISON M., and C. D. WALDON. Some characteristics of fuel sprays at low-injection pressures.

National Advisory Committee for Aeronautics, Technical Notes No. 399, Nov. 17, 1931, Washington, November 1931, pp. 6, ill., diagrs.

ROUDE, HANS. Der luftschutz.

Berlin, Reichsverband der deutschen industrie, 1931.

ROUMANIA. Réceptions et manifestations organisées par l'Aéro-Club Royal de Roumanie.

Bull. Féd. Aér. Int., 12e année, No. 46-47 (juil.-oct. 1931), Paris, pp. 104-109, ill.

ROUSSILHE, H. *Emploi de la photographie aérienne aux leviers topographiques à grande échelle.*
1931, pp. 480, illus.

ROWELL, ROSS E. *Expeditionary movements of aircraft.*
U.S. Air Services, Vol. 16, No. 3 (March, 1931), Washington, pp. 19-21, illus.

ROY, MAURICE. *Contribution à la théorie des ailes sustentatrices; caractéristiques des ailes monoplans; moments de tangage et foyers.*
Paris, Le Centre de Documentation Aéronautique Internationale de l'Aéro-Club de France, 1931, pp. 56, diagrs. Aéro-Club de France. *Travaux du Cercle d'Études Aérotechniques*, fasc. 5. Extrait des Comptes Rendus de l'Association Technique Maritime et Aéronautique, Session de 1931.

ROYAL AERO CLUB. *The new home of the Royal Aero Club.*
Flight, No. 1188, Vol. 23, No. 40 (Oct. 2, 1931), London, p. 987, illus.

ROYAL AERONAUTICAL SOCIETY. *See* Burge, Cyril G.: *Handbook of aeronautics; a compendium of the modern practice of aeronautical engineering, containing over 500 graphs and diagrams, tables and formulae for the aeronautical engineer; published under the authority of the Council of the Royal Aeronautical Society.*

ROYAL AIR FORCE. *Naval eight, a history of No. 8 Squadron R.N.A.S. afterwards 208 R.A.F. from its formation in 1916 to Armistice 1918.* Foreword by Air Vice Marshall Sir Chas. Lambe.
1931, ill., privately printed.

- *The twelfth Royal Air Force display.*
Flight, No. 1175, Vol. 23, No. 27 (July 3, 1931), London, pp. 619-634, illus.
- *See* Bradfield, F. B.: *The 5-ft open jet wind tunnel, R. A. F.*
- *See* Great Britain. Air Ministry: *Manual for medical officers of the Royal Air Force.*
- *See* Great Britain. Air Ministry: *Permanent commissions in the General Duties Branch of the Royal Air Force. Regulations for appointment of university candidates.*
- *See* Great Britain. Air Ministry: *Report on the health of the Royal Air Force for the year 1930.*
- *See* Great Britain. Air Ministry: *Report on the Royal Air Force promotion exams B and C held on the 2nd, 3rd, 4th and 5th Sept. 1930.*
- *See* Great Britain. Air Ministry: *Royal Air Force aircraft route book . . .*
Air Ministry.
- *See* McAlery, C. M.: *The Royal Air Force in 1930.*
- *See* McAlery, C. M.: *The Royal Air Force of to-day.*
- *See* McAlery, C. M.: *The twelfth Royal Air Force Display.*
- *See* McAlery, C. M.: *The work and training of the Royal Air Force.*
- *See* Military aeronautics: *On the Army and the Air Force.*

ROZENDAAL, JOHN. *Berlijnsche brief.*
Het Vliegveld, 15de Jaarg., No. 4, 6 (April, Juni 1931), Amsterdam, pp. 132-136, 203-207, illus.

— *Luchtschroefwagen tegen vliegtuig.*
Het Vliegveld, 15de Jaarg., No. 2 (Feb. 1931), Amsterdam, pp. 48-51, illus.

RS-1. *See* Kepner, William E.: Flight of RS-1, San Antonio, Tex., to Scott Field, Ill.

RUDDER. *See* Bradfield, F. B.: Maximum lift coefficient of R.A.F. 30 all-moving rudder.

— *See* Westland: Westland rudder bias gear. A device which relieves pilot of fatigue of counteracting turning moment.

RUFFNER, B. P. *See* Klemin, Alexander, and B. P. Ruffner: A new type of gyroplane. Wind tunnel researches and full scale tests with a gyroplane with rigidly connected feathering rotor blades.

RUSSELL, FRANK H. The design and production of military aircraft.
U.S. Air Services, Vol. 16, No 4 (April 1931), Washington, pp. 36-37.

— A plan of patent research and development of inventive ideas.
U.S. Air Services, Vol. 16, No. 5 (May 1931), Washington, p. 39.

RUSSELL, H. W., and W. A. WELCKER, Jr. Endurance and other properties at low temperatures of some alloys for aircraft use.
National Advisory Committee for Aeronautics, Technical Notes No. 381, June 12, 1931, Washington, June 1931, pp. 16, ills., diagrs., tabls.

RUSSIA. *See* Stoklitzky, von: Segelflug-Wettbewerb 1929 in der UdSSR.

RYSKY, CARLO DE. La croisière italienne dans l'Atlantique-Sud.
L'Aérophile, 39e année, No. 2 (15 fév. 1931), Paris, pp. 35-37, ills., map.

S

S. 5. *See* Bradfield, F. B., and R. A. Fairthorne: Drag tests on full scale float of S. 5.

— *See* Jones, E. T.: Measurement of incidence and speed of the S. 5 seaplane on alighting.

— *See* William Froude National Tank: Report on experiments with model of seaplane float test with the S. 5 duralumin float. Model 807B.

S.P.C.A. The S.P.C.A. 40 T commercial airplane (French). An all-metal cantilever monoplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 143, April 30, 1931, Washington, April 1931, pp. 3, ills.

SACRÉ, H. WALAARDT. Een luchtschipdienst Nederland-Indië.
Het Vliegveld, 15de Jaarg., No. 5 (Mei 1931), Amsterdam, p. 153.

SÄNGER, EUGEN. Zur genauen Berechnung vielholmigparallelstegiger, ganz- und halbfreitragender, mittelbar und unmittelbar belasteter Flügelgerippe.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 20. Heft (28. Okt. 1931), München und Berlin, pp. 597-603, ills., tabls.

SAFETY. The Chamber's safety conference project.
Aviation, Vol. 30, No. 7 (July 1931), New York, p. 416, ill.

— Le premier Congrès international de la Sécurité aérienne.
L'Aérophile, 39e année, No. 1 (15 jan. 1931), Paris, pp. 3-6, ills.

— Premier Congrès Internationale de la sécurité aérienne organisé par le Comité français de propagande aéronautique avec le patronage du Ministère de l'Air.

Reports. Paris, 1930, Tome I et II.

— Safety first—What pilots want in the planes they buy . . . A survey.
Western Flying, Vol. 5, No. 5 (May 1931), Los Angeles, Calif., p. 35.

SAFETY. Safety in flight.

Engineering, Vol. 132 (Nov. 13, 1931), London, pp. 614-615.

- See Barnitz, Richard B.: Safety at airports.
- See Cost, R. W.: Hangar lighting and safety.
- See Fuchs, Richard, und Wilhelm Schmidt: Das gefährliche seitliche Kippen eines Flugzeuges über den Flügel und seine Beeinflussung.
- See Grantham, Frederick W.: Safety in the air.
- See Haynes, Grissom E.: Cockpits and crashes.
- See Helmore, W.: Experiments on flame extinction in gaseous mixtures.
- See Huntington, Dwight: Safety for the light airplane.
- See K., A.: Improving rules for airplane safety.
- See Kühn, Fritz: Erhöhung der Sicherheit von Luftfahrzeugen durch Bekämpfung der Brandgefahr.
- See Magaldi, G.: I progressi della sicurezza aerea e il recente Congresso di Parigi.
- See Paterson, Robert: Safety.
- See Ramsey, Logan C.: Aircraft instruments as a safety factor.
- See Stockholm: Den första internationella säkerhets-kongressen.
- See Wilson, John: Making airplanes safe. Inspection methods of the Boeing Airplane Company.

SAILPLANES. See Lippisch, A.: The development, design and construction of gliders and sailplanes.

SAILS. The aerodynamics of sails.

Aeronautical Engineering, suppl., to the Aeroplane, Vol. 40, No. 21 (May 27, 1931), London, pp. 979-980.

- See Curry, Manfred: Sails and aerodynamics.

SAINT EXUPÉRY, ANTOINE DE. Vol de nuit. Préface d'André Gide.
Paris, Gallimard, Editions de la Nouvelle Revue Française, 1931, pp. 181.

ST. JOHN, R. U. A downtown airport.

Airway Age, Vol. 13, No. 14 (Oct. 3, 1931). New York, pp. 277-279.

ST. LOUIS. See Sexton, Russell W.: Lambert-St. Louis airport.

- See Sexton, Russell W.: Lambert-St. Louis municipal airport of 1931.

SAINTE-LAGUË, A. See Magnan, A., et A. Sainte-Laguë: Aérodynamique.—Sur la distribution des vitesses aérodynamiques autour d'un avion in vol.

SALES. Production and sales for 1930.

Western Flying, Vol. 9, No. 3 (March 1931), Los Angeles, Calif., pp. 30-31, diagrs.

- Suggestions pour le refroidissement des moteurs par circulation d'eau.
L'Aéronautique, 13me année, No. 149. Bulletin L'Aérotechnique, 9e année, No. 106 (oct. 1931), Paris, pp. 353-354, ills.
- See Hawkins, Walter B.: Profits from sales.
- See Kendall, William: Price—Its effect on sales.

SALMON, JULIA. *See* Engleman, Finis E., and Julia Salmon: Airways.

SALMONI, RENATO. *See* Montelucci, G.: La detonazione nei motori a scoppio.

SALMSON. Concerning Salmson aero engines.
Aeroplane, Vol. 41, No. 17 (Oct. 21, 1931), London, pp. 974-980, ills.

— The 50 h.p. British Salmson aero engine.
Flight, No. 1193, Vol. 23, No. 45 (Nov. 6, 1931), London, pp. 1100-1104, ills., diagrs.

SAMOILOWITSCH, R. "S O S in der Arktis."
Berlin, Union Deutsche Verlags-Ges., 1929, pp. 410, ills.

SAMSON, CHARLES RUMNEY. Charles Rumney Samson.
Aeroplane, Vol. 40, No. 6 (Feb. 11, 1931), London, pp. 234-235.

— A flight from Cairo to Cape Town and back.
London, E. Benn, Ltd., 1931, pp. x, 196, ills., map.

SAMUELS, L. T. Airplanes for regular daily upper-air observations.
U.S. Air Services, Vol. 16, No. 10 (Oct. 1931), Washington, pp. 20-22, ills.

— Sounding-balloon releasing device.
Monthly Weather Review, Vol. 59, No. 2 (Feb. 1931), Washington, p. 76, illus.

SAN ANTONIO, TEXAS. *See* United States Congress. House. Committee on Military Affairs: Appropriation for construction at Randolph Field, San Antonio, Texas. Report to accompany H.R. 14912.

SANDBERG, G. Uit de praktijk van het vliegen. II, III, IV, V, VI.
Het Vliegveld, 15de Jaarg., No. 4, 5, 6, 10, 11 (April, Mai, Juni, Juli, Oct., Nov. 1931), Amsterdam, pp. 144, 166-167, 208-210, 246-247, 358, 394.

SANDERS, C. J., and A. H. RAWSON. The book of the C. 19 autogiro; the principle of operation described together with notes on running and maintenance.
London, Sir Isaac Pitman and Sons, Ltd., 1931, pp. ix. 112, ill.

SANDIFORD, ROBERTO. Sugli aerodromi galleggianti.
Riv. Rev., Anno 7, N. 3 (marzo 1931), Roma, pp. 415-420.

SANITATION. *See* Marvingt, Marie: L'aviation sanitaire coloniale aux derniers congrès d'aéronautique.

SARFATTI, GUALTIERO. Principi fondamentali della condotta della guerra aerea.
Riv. Aer., Anno 7, N. 11 (nov. 1931), Roma, pp. 322-330.

SASAKI-TATUDIRÔ. Hûtô no kabe ga mokei no yôryoku-keisû ni oyobosu eikyô ni tuite. (On the effect of the walls of a wind tunnel upon the lift coefficient of a model.)
Report of the Aeronautical Research Institute, Tôkyô Imperial University, No. 77 (Vol. 6, 11), (Dec. 1931), Tôkyô, pp. 315-340, diagrs.

SATTLER, C. H., und J. KAISER. Berufswahl und Auge.
Stuttgart, Verlag von Ferdinand Enke, 1931, pp. 66.

SAUNDERS-ROE. The Saunders-Roe A7 flying boat.
Flight, No. 1150, Vol. 23, No. 2 (Jan. 9, 1931), London, pp. 25-26, ills.

SAVAGE, E. W. Fixed base flying analysed.
Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 82-84, diagrs., tabls.

— Production and sales. Statistics tend to show the improved state of industry.
Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 75-81, diagrs., tabls.

SAVONIUS, S. J. The S-rotor.
 Science (Suppl.), Vol. 73, No. 1900 (May 29, 1931), New York, p. 14.

SAYERS, W. H. Steel strip construction. Use of standard sections and fittings reduces the cost of even small-scale production.
 Aircraft Engineering, Vol. 3, No. 27 (May 1931), London, pp. 105-106.

SBERNADORI, PAOLO. An aerial navy goes to sea.
 Nat. Aer. Mag., Vol. 9, No. 2 (Feb. 1931), Washington, pp. 21, 23-24, 26-27, ills.

— Commercial aviation in Italy.
 Nat. Aer. Mag., Vol. 9, No. 12 (Dec. 1931), Washington, pp. 11-12.

SCARONI, SILVIO. Commento alle "Memorie" del Boarne von Richthofen.
 Riv. Aer., Anno 7, N. 9 (sett. 1931), Roma, pp. 417-446.

SCHAEFER, O. W. Is bildning på flygplan.
 Flygning, Årg. 9, N: R 1 (Febr. 1931), Stockholm, pp. 33, 36, ills.

SCHÄFFER, ERNST. Pour le Mérite. Flieger im Feuer.
 Berlin, Union Deutsche Verlagsgesellschaft, 1931, pp. 178, ills.

— Glück ab; bahnbrecher der lüfte.
 Berlin, Union Deutsche Verlagsgesellschaft, 1931, pp. 217, ports. Contents: Otto Lilienthal, S. A. André, David Schwarz, Ferdinand Graf Zeppelin, Hugo Eckener, Hugo Junkers, Charles A. Lindbergh, E. G. freiherr v. Hünefeld, Umberto Nobile, R. E. Byrd.

SCHALCKENS, LÉO. Per vliegtuig naar Skandinavië.
 Brussel, A. Wouters, 1931.

SCHARNOW, C. Luftschiffhalle Löwental.
 Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 21 (23. Mai 1931), Berlin, p. 670, ill.

SCHEIBE, R. Die Verkehrsluftfahrt geographisch betrachtet.
 Dresden, Zhan und Iaensch, 1931, pp. 125, ill.

SCHEINERT, CARLETON A. Private flying in the Rockies.
 Western Flying, Vol. 9, No. 5 (May 1931), Los Angeles, Calif., pp. 39-41, ills.

SCHEMPP, MARTIN. Cloud hopping in soaring flight.
 Nat. Aer. Mag., Vol. 9, No. 12 (Dec. 1931), Washington, pp. 21-22, ills.

SCHEMPP, MARTIN H. See Hirth, Wolfram K. E., Martin H. Schempp, and Jack Herrick: Elmira soaring contest, 1930.

SCHENCK. See Wolski, Kazimierz: Nowoczesne próby na zmęczenie i opis maszyny Schenck'a zainstalowanej w IBTL.

SCHENK, EWALT. Der Flughafen.
 Leipzig 1931, pp. 75.

SCHENK, HEINZ. Finanzierung und Organisation des Luftverkehrs, unter besonderer Berücksichtigung der deutschen Verhältnisse.
 Frankfort a. M., Diplom-Volkswirt, 1930, pp. 165, ill.

SCHEUBEL, F. N. On atomization in carburetors.
 National Advisory Committee for Aeronautics, Technical Memorandums No. 644, Nov. 29, 1931, Washington, October 1931, pp. 10, ills., diagrs.

— Über den Luftwiderstand luftgekühlter Sternmotoren.
 Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 3. Heft (14. Feb. 1931), München und Berlin, pp. 72-73, ills.

SCHEY, OSCAR WILLIAM. The comparative performance of superchargers.
 National Advisory Committee for Aeronautics, Report No. 384, April 15, 1931, Washington, U.S. Government Printing Office, 1931, pp. 15, ills., diagrs., tabls.

SCHEY, OSCAR WILLIAM, and VERN G. ROLLIN. The effect of increased carburetor pressure on engine performance at several compression ratios.

National Advisory Committee for Aeronautics, Report No. 404, Jan. 25, 1932, Washington, U.S. Government Printing Office, 1931, pp. 12, ills., diagrs., tabl.

SCHEY, OSCAR WILLIAM, and ARNOLD E. BIERMANN. The effect of valve timing upon the performance of a supercharged engine at altitude and an unsupercharged engine at sea level.

National Advisory Committee for Aeronautics, Report No. 390, Aug. 14, 1931, Washington, U.S. Government Printing Office, 1931, pp. 13, ills., diagrs.

SCHEY, OSCAR WILLIAM, and ALFRED W. YOUNG. A method for reducing the temperature of exhaust manifolds.

National Advisory Committee for Aeronautics, Technical Notes No. 390, Sept. 8, 1931, Washington, September 1931, pp. 9, ills., diagr., tabl.

SCHEY, OSCAR WILLIAM. Superchargers and supercharging. A summary of the data obtained during an important series of experiments carried out by the N.A.C.A.

Aircraft Engineering, Vol. 3, No. 28 (June 1931), London, pp. 134-138.

SCHIAVONE, MICHELE. I servizi aerei civili. Studio statistico-economico-giuridico.

Genova, tip. Bozzo e Coccarello, 1930, pp. viii, 168, ills.

SCHILDHAUER, C. H. The DOX—Profitable transportation.

U.S. Air Services, Vol. 16, No. 10 (Oct. 1931), Washington, pp. 18-19, ills.

SCHILHANSL, MAX. Modellversuche zur Ermittlung des Leistungsbedarfs für die Künstliche Belüftung von Motorenprüfständen.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 36-42, ills., diagrs.

— Versuche an einem Windkanalmodell.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 23-35, ills., diagrs.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 4., 5. Heft (28. Feb., 14. März 1931), München und Berlin, pp. 107-117, 147-149, ills., diagrs.

SCHILLER, LUDWIG und R. HERMAN. Resistance of plates and pipes at high Reynolds numbers.

National Advisory Committee for Aeronautics, Technical Memorandums No. 600, Jan. 8, 1931, Washington, January 1931, pp. 13, diagrs.

SCHILLER, LUDWIG. See Wien, Wilhelm Carl Werner Otto Fritz Franz, und F. Harms, unter mitarbeit von H. Lenz: Handbuch der Experimentalphysik, Band 4, 3. Teil. Hydro- und Aerodynamik, 3. Teil, Technische anwendungen.

SCHIRMER, M. See Sturm, Fritz, und M. Schirmer: Triebwerkanlage mit Vorgelege im Luftschiff "Graff Zeppelin."

SCHLEGEL, JOHN. Aircraft export salesmanship below the Rio Grande. Aero Digest, Vol. 18, No. 4 (April 1931), New York, pp. 35, 47.

SCHLERF. See Beinhorn, Elli Beinhorn, Schlerf und Udet erzählen.

SCHMEIDLER, WERNER. Eine Formel für das Rollmoment bei Tragflügeln.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 22. Heft (28. Nov. 1931), München und Berlin, pp. 658-659, tabl.

— Untersuchungen über Flugzeuge mit veränderlichen Flächen.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 11. Heft (15. Juni 1931), München und Berlin, pp. 325-329, ills., diagrs.

SCHMIDT, ERICH K. O. Einfluss von Kochsalzlösungen verschiedener Konzentration auf den Verlauf des Korrosionsangriffs im Wechseltauchversuch.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 521-524, ills., diagrs., tabls.

— Korrosion durch Potentialunterschiede und ihre Verhütung.
Zeitschr. Flug. Motorluftsch., 22. Jahrg., 6. Heft (28. März 1931), München und Berlin, pp. 177-178 ills.

— Quantitative Ermittelung der Schutzwirkung von Anstrichen auf Holz.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 537-541, ills., diagrs., tabls.

— Seewasserbeständigkeit galvanischer Überzüge auf Eisen und Leichtmetallen.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 5. Heft (14. März 1931), München und Berlin, pp. 141-147, ills., tabls.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 525-531, ills., tabls.

— Verfahren der Korrosionsprüfung.
Jahrbuch 1931 der Deutschen Versuchs-Anstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 495-504, ills., diagrs.

SCHMIDT, FRIEDRICH. Modell flugzeuge mit pressluft-motor. Wie bane ich mire selbst. Bd. 86.
Leipzig, H. Beyer, 1931.

SCHMIDT, WILHELM. Beitrag zur Entwicklung eines autorotationsfreien steil landbaren Flugzeuges.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 18, 19. Heft (28. Sept., 14. Okt. 1931), München und Berlin, pp. 546-549, 569-578, ills., diagrs.

— Development of a non-autorotative airplane capable of steep landing.
National Advisory Committee for Aeronautics, Technical Memorandums No. 650, Dec. 10, 1931, Washington, December 1931, pp. 26, ills., diagrs.

— See Fuchs, Richard, and Wilhelm Schmidt: The dangerous flat spin and the factors affecting it.

— See Fuchs, Richard, and Wilhelm Schmidt: The dangerous sideslip of a stalled airplane and its prevention.

— See Fuchs, Richard, und Wilhelm Schmidt: Das gefährliche seitliche Kippen eines Flugzeuges über den Flügel und seine Beeinflussung.

— See Fuchs, Richard, and Wilhelm Schmidt: The steady spin.

SCHMIESCHEK, ULRICH. Hypersensibilisierung optisch sensibilisierter Emulsionen und optisch Sensibilisierung hypersensibilisierter Emulsionen.
Jahrbuch 1931 der Deutschen Versuchsanstalt für luftfahrt, E. V., München und Berlin, 1931, pp. 594-599, diagrs.

— Versuche zur Steigerung der Haltbarkeit hypersensibilisierter Emulsionen.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 600-604, diagrs., tabls.

SCHMUTTERMAYER, G. Flieger-Erinnerungen.
Dachan, Druckerei und Verlagsanstalt Bayerland a.g., 1931, pp. 53.

SCHNADEL, GEORG. Relations between ship design and seaplane design.
National Advisory Committee for Aeronautics, Technical Memorandums No. 645, Nov. 5, 1931, Washington, November 1931, pp. 10, diagrs.

— Zusammenhänge zwischen Schiffbau und Seeflugzeugbau.
Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 27 (4. Juli 1931), Berlin, pp. 870-872, ills., diagrs.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 15. Heft (14. Aug. 1931), München und Berlin, pp. 453-456, ills., diagrs.

SCHNAUFFER, KURT. *Das Klopfen von Zündermotoren.*

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 375-378, ill., diagrs.

— Untersuchung von Verbrennungsvorgängen in Zündmotoren mittels elektrischer Messverfahren.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 17. Heft (14. Sept. 1931), München und Berlin, pp. 526-530, ill., diagrs.

SCHNEIDER TROPHY. *Arets Schneidercupvinnare.*

Flygning Årg. 9, N:R. 11 (Nov. 1931), Stockholm, pp. 213-215, ill.

— La Coupe Schneider et le record de vitesse.

L'Aéronautique, 13me année, No. 149 (oct. 1931), Paris, p. 343, ill.

— La Coupe Schneider 1931.

L'Aérophile, 39e année, No. 9 (15 sept. 1931), Paris, pp. 258-259, ill.

— Finale to the Schneider trophy contest.

Flight, No. 1199, Vol. 23, No. 51 (Dec. 18, 1931), London, pp. 1240-1241.

— History of the Schneider trophy contests.

Flight, No. 1185, Vol. 23, No. 37 (Sept. 11, 1931), London, pp. 895-908, ill.

— Notes techniques et critiques sur les supermarine de la Coupe Schneider.

L'Aéronautique, 13me année, No. 150 (nov. 1931), Paris, pp. 375-380, ill., diagrs.

— On the course for the Schneider contest.

Aeroplane, Vol. 40, No. 6 (Feb. 11, 1931), London, pp. 225-226, 228.

— On the Schneider affair.

Aeroplane, Vol. 40, No. 4 (Jan. 28, 1931), London, pp. 133-134, 136.

— On the Schneider contest day-by-day.

Aeroplane, Vol. 40, No. 5 (Feb. 4, 1931), London, pp. 181-182, 184, 186.

— On the Schneider trophy contest.

Aeroplane, Vol. 41, No. 11, 12 (Sept. 9, 16, 1931), London, pp. 609-620, 685-700, ill.

— Our Schneider preparations.

Aeroplane, Vol. 41, No. 7 (Aug. 12, 1931), London, pp. 413-424, ill.

— The passing of an era. The gains and losses of the Schneider Trophy contests.

Aircraft Engineering, Vol. 3, No. 32 (Oct. 1931), London, pp. 239-240.

— Power and speed. The influence of the Schneider contests.

U.S. Air Services, Vol. 16, No. 11 (Nov. 1931), Washington, D.C., pp. 11-15, ill.

— The Schneider contest.

Flight, No. 1167, 1180, 1182, 1183, Vol. 23, No. 19, 32, 34, 35 (May 8, Aug. 7, 21, 28, 1931), London, pp. 399, 782, 827-829, 857-858, ill.

— Schneider contest, 1931.

Flight, No. 1181, Vol. 23, No. 33 (Aug. 14, 1931), London, pp. 809-810, map.

— The Schneider decision.

Flight, No. 1154, Vol. 23, No. 6 (Feb. 6, 1931), London, pp. 107-108.

— Schneider notes.

Aeroplane, Vol. 40, No. 12 (March 25, 1931) London, pp. 511.

— The Schneider trophy.

Flight, No. 1153, Vol. 23, No. 5 (Jan. 30, 1931), London, pp. 97-98.

— The Schneider trophy contest.

Aeroplane, Vol. 40, 41, No. 3, 6 (Jan. 21, Aug. 5, 1931), London, pp. 94, 96, 342, map.

SCHNEIDER TROPHY. The Schneider trophy contest.

Engineering, Vol. 132, No. 3427 (Sept. 18, 1931), London, p. 385, ill.
 Vickers supermarine Rolls-Royce racing seaplane.
 Nature, Vol. 128, No. 3229 (Sept. 19, 1931), London, pp. 471-473.
 11th contest. Great Britain has won it for three times. Final award.

— Schneider trophy details.
 Aircraft Engineering, Vol. 3, No. 32 (Oct. 1931), London, p. 246.

— The Schneider trophy. High speed flight selected.
 Flight, No. 1161, Vol. 23, No. 13 (March 27, 1931), London, pp. 266-267.

— Schneider trophy preparations.
 Aeroplane, Vol. 41, No. 9, 10, 11 (Aug. 26, Sept. 2, 9, 1931), London, pp. 528-530, 580-584, 646a-646b, ills.

— The Schneider trophy seaplane. Some notes on the special features of the S. 6. B. with reasons for their incorporation.
 Aircraft Engineering, Vol. 3, No. 32 (Oct. 1931), London, pp. 247-248, ills.

— The Schneider swan song.
 Aeroplane, Vol. 41, No. 25 (Dec. 16, 1931), London, pp. 1367-1370, ills.

— Something more about the machines and engines that won the Schneider trophy.
 Aeroplane, Vol. 41, No. 14 (Sept. 30, 1931), London, pp. 816-820, ills.

— 379 miles per hour.
 Western Flying, Vol. 10, No. 4 (Oct. 1931), Los Angeles, Cal., p. 27, ill., tabl.

— 12. internationaler Wettflug für Seeflugzeuge um die Schneider-Trophäe in England.
 Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 40 (3. Okt. 1931), Berlin, p. 1263.

— See Aeronautical Research Committee: Collected reports on British high speed aircraft for the 1927 Schneider Trophy contest.

— See Banks, F. Rodwell: The evolution of a Schneider engine.

— See Blanchet, Georges: La Coupe.

— See Bradbrooke, F. D.: The why and wherefore of the contest.

— See Bridgman, Leonard: Britain's representatives.

— See Coombes, L. P.: Notes on the Schneider Cup race of 1927.

— See James, Thurston: How to see the contest.

— See Kleffel, Walther: Abschied vom Schneider-Pokal.

— See L., P.: Un moteur de Coupe Schneider 1929; le 1600 HP Hispano-Suiza.

— See Lallier, Roger: La Coupe Schneider est definitivement gagnée par l'Angleterre.

— See McAleery, C. M.: At Calshot.

— See McLean, Sir Robert: Has Schneider racing been worth while.

— See Moffett, William A.: The Schneider Seaplane Trophy—symbol of speed supremacy in the air.

— See Robertson, F. A. de V.: The end of the historic contest. Schneider trophy won by Great Britain.

SCHNEIDER TROPHY. *See* Robertson, F. A. de V.: Schneider teams at Calshot.

— *See* Sinbad the Sailor: The contest from afloat.

SCHNURMACHER, E. C. Without leaving the ground.

Western Flying, Vol. 10, No. 1 (July 1931), Los Angeles, Calif., pp. 32-33, ills.

SCHOFIELD, T. H. *See* Grogan, J. D., and T. H. Schofield: Report on some properties of alloys of aluminium with thorium and silicon.

— *See* Rosenhain, W., J. D. Grogan, and T. H. Schofield: Gas removal and grain refinement in aluminium alloys.

— *See* Rosenhain, W., J. D. Grogan and T. H. Schofield: The influence of Titanium Tetrachloride on cast aluminium alloys.

SCHOOLS. *See* Lawson, I. N., Jr.: The business of running a flying school.

— *See* Ross, E. W.: Itinerant flying schools.

— *See* Stimson, Thomas E., Jr.: Aviation in the high schools.

SCHRAIVOGL, K. Einfluss der Probestabform auf Zugfestigkeit und Bruchdehnung von dünnen Leichtmetallblechen.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 485-494, ills., diagrs., tabls.

SCHREIBER, D. Dem Gedächtnis eines deutschen Helden. Zu Boelckes 40. Geburtstag.

Luftschau, 4. Jahrg., Nr. 9 (10 Mai 1931), Berlin, p. 68.

— Idealismus deutscher Flieger.

Luftschau, 4. Jahrg., Nr. 2 (24. Jan. 1931), Berlin, pp. 9-10.

SCHREIBER, ERNST. Messgenauigkeit des Behmloches für Flugzeuge in geringen Flughöhen.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 3. Heft (14. Feb. 1931), München und Berlin, pp. 77-79, ills., tabl.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin 1931, pp. 591-593, ills., tabl.

SCHRENK, MARTIN Jahresschau der Luftfahrtwissenschaft.

Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 32 (8, Aug. 1931), Berlin, pp. 1026-1028.

— Über das Zusammenwirken von Flugwerk und Triebwerk.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 23, 24. Heft (14. 28. Dez. 1931), München und Berlin, pp. 695-702, 721-727, ills., diagrs.

SCHRENK, OSKAR. Experiments with a wing from which the boundary layer is removed by suction.

National Advisory Committee for Aeronautics, Technical Memorandums No. 634, Aug. 20, 1931, Washington, August 1931, pp. 12, diagrs.

— Versuche mit einem Absaugeflügel.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 9. Heft (15. Mai 1931), München und Berlin, pp. 259-264, ills., diagrs.

SCHRÖDER, PAUL. Determination of resistance and trimming moment of planning water craft.

National Advisory Committee for Aeronautics, Technical Memorandums No. 619, May 7, 1931, Washington, May 1931, pp. 8, diagrs.

— The take-off of seaplanes, based on a new hydrodynamic reduction theory.

National Advisory Committee for Aeronautics, Technical Memorandums No. 621, May 21, 1931, Washington, May 1931, pp. 8, diagrs.

SCHRÖDER, PAUL. Ein Übertragungsgesetz der Hydrodynamik und seine Anwendung bei der Untersuchung des Startes von Seeflugzeugen.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 1. Heft (14. Jan. 1931), München und Berlin, pp. 8-12, ills., diagrs.

SCHRÖER, RUDI. *See* Eisner, Fr. G. Sudeck, Rudi Schröer, und O. Zinke: Vergrößerung der effektiven Höhe von Flugzeugschleppantennen.

SCHÜTT, KARL. Einführung in die Physik des Fliegens.

Berlin-Charlottenberg, C. J. E. Volekmann nachf. g. m. b. h. [1931], pp. 125, ills., diagr.
Also in the series "Luftfahrt und Schule."
Flugzeugbau und Luftfahrt, Heft 15.

SCHULZ, W. R. A German "Canard" aeroplane. Some notes on the characteristics of the Focke-Wulf "Ente" with construction details.

Aircraft Engineering, Vol. 3, No. 24 (Feb. 1931), London, pp. 39-40, ills.

SCHWARZ, DAVID. *See* Schäffer, Ernst: Glück ab; bahnbrecher der lüfte.

SCHWARZLER, KARL. Flugzeugkatapulte. Allgemeines, Berechnungen und Messungen.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 14. Heft (28. Juli 1931), München und Berlin, pp. 425-428, ills., diagrs.

SCHWEIZERISCHE LUFTVERKEHRS-UNION. Offizieller Schweizerischer Flugplan.
Hrsg. durch d. Informations- u. Propagandabureau d. Schweiz. Luftverkehrs-Union.
Zurich, 1931.

SCIENTIFIC progress. *See* Ames, Joseph Sweetman: Glancing back at 1930.
Scientific progress.

SCOTLAND. On flying in Scotland.

Aeroplane, Vo. 40, No. 23 (June 10, 1931), London, pp. 1073-1074, 1076, 1078, 1080, ills.

SCOTT, C. W. A. Mr. Scott's record flight to Australia.

Aeroplane, Vol. 40, No. 15 (April 15, 1931), London, p. 650.

— The out-and-home record.

Aeroplane, Vol. 40, No. 23 (June 10, 1931), London, pp. 1081-1082, ill.

— *See* Hart, Edward J.: C. W. A. Scott.

SCOTT, F. P. Air Force training. Training in peace and war.

Flight, No. 1175, Vol. 23, No. 27 (July 3, 1931), London, pp. xxvii-xxx, ills.

— Training in peace and war.

Aeroplane, Vol. 41, No. 1 (July 1, 1931), London, pp. 40-42, ills.

SCOTT, MERIT. The effect of the presence of a grid upon certain characteristics of the airflow at the surface of an airfoil.

Physical Review, Vol. 37, No. 12 (June 15, 1931), Minneapolis, p. 1701. (Abstract).

— The variation of the thermal boundary layer of a miniature airfoil.

Physical Review, Vol. 37, No. 8 (April 15, 1931), Minneapolis, p. 1016. (Abstract).

SCOTT-HALL, S. Experiments on an Ape aeroplane fitted with pilot planes.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 838-842, ill., diagrs., tabls. Rep. Mem. No. 1273. (Ae. 419.)

— The spinning of aeroplanes.

Journ. Roy. Aeronaut. Soc., Vol. 35, No. 247 (July 1931), London, pp. 609-623.

— Stresses in wing structures. Accelerometer and incidence measurements in various manoeuvres.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 656-661, ills., diagrs. Rep. Mem. No. 1309. (Ae. 449.)

SCROGGS, A. F. *See* Nutt, A. E. Woodward, A. F. Scroggs, and E. Finn: Range of aircraft with air-cooled radial engine using altitude control.

SCUDDER, NATHAN FROST. *See* Soule, Hartley Akin, and Nathan Frost Scudder: A method of flight measurement of spins.

SEADROME. *See* Fixel, Rowland, W.: The seadrome and international law.

SEAPLANE hulls. *See* Gerard, I. J.: A method of testing the strength of aircraft hulls.

— *See* Wigley, W. C. S.: Strength of wooden seaplane hulls (Full sized machines—Third series).

SEAPLANES. The design of sea-going aircraft. Parts I and II.
Aeroplane, Vol. 40, Nos. 2, 3 (Jan. 14, 21, 1931), London, pp. 71-72, 74, 76, 113-114, ills., diagrs.

— The development of long-range flying-boats.
Aeronautical Engineering, suppl. to the *Airplane*, Vol. 40, No. 4 (Jan. 28, 1931). London, pp. 151-152b, ills., diagrs.

— A novel seaplane installation. All-metal monocoque floats with longitudinal flutes and an aerofoil section spreader-bar.
Aircraft Engineering, Vol. 3, No. 31 (Sept. 1931), London, pp. 225-226, ills.

— Seaplanes.
Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 59-60.

— *See* Bradfield, F. B., and F. W. G. Greener: Wind tunnel test of the increased drag of a quarter scale float on adding rivets.

— *See* Budig, F.: La stabilisation marine des hydravions par plans de dérive.

— *See* Collins, A. R.: A formula for the bouyancy of the wing floats of flying boats and single float seaplanes.

— *See* Constantin, L.: Une possibilité d'augmentation de la charge payante de certains hydravions.

— *See* Dornier: Entwurf eines Dornier-Rennflugbootes.

— *See* Dornier, Claude: Vorträge und abhandlungen aus dem gebiete des flugzeugbaues und luftschiffbaues 1914-1930.

— *See* Fogg, Robert S.: Money-making seaplane operation.

— *See* Garner, H. M., and L. P. Coombes: The determination of the water resistance of seaplanes.

— *See* Gouge, A.: Some aspects of the design of sea-going aircraft.

— *See* Gronau, W. v.: Seeflugzeug und Schiff.

— *See* Irving, H. B., and A. S. Batson: Spinning of a model of the Fairey IIIIf seaplane.

— *See* K., A.: Seaplane bases.

— *See* K., A.: Seaplane float test basin.

— *See* Kean, John S.: Racing seaplanes.

— *See* Latécoère: Latécoère 38-O flying boat (French). A long-range sesquiplane for carrying mail.

SEAPLANES. *See* Lower, J. H.: Some notes on flying boats and seaplanes.

— *See* Mitchell, R. J.: Essais des maquettes d'hydravions au bassin des carènes.

— *See* Moffett, William A.: The Schneider Seaplane Trophy—symbol of speed supremacy in the air.

— *See* Munro, William: Hull design of flying boats.

— *See* Pabst, Wilhelm: Landing impact of seaplanes.

— *See* Pabst, Wilhelm: Über den Landestoss von Seeflugzeugen.

— *See* Piaggio: L'S 55 metallico.

— *See* Rennie, J. D.: The development of the long-range flying boat.

— *See* Saunders-Roe: The Saudners-Roe A7 flying boat.

— *See* Schnadel, Georg: Relations between ship design and seaplane design.

— *See* Schnadel, Georg: Zusammenhänge zwischen Schiffbau und Seeflugzeugbau.

— *See* Schneider trophy: The Schneider trophy contest.

— *See* Schneider trophy: The Schneider Trophy seaplane. Some notes on the special features of the S. 6. B. with reasons for their incorporation.

— *See* Schröder, Paul: Determination of resistance and trimming moment of planing water craft.

— *See* Schröder, Paul: The take-off of seaplanes, based on a new hydrodynamic reduction theory.

— *See* Schröder, Paul: Ein Übertragungsgesetz der Hydrodynamik und seine Anwendung bei der Untersuchung des Startes von Seeflugzeugen.

— *See* Seewald, Friedrich: Über Schwimmer und Schwimmerversuche.

— *See* Taub, Josef: Beitrag zur Frage der Belastungsannahmen für den Landungsstoss von Seeflugzeugen.

— *See* Taub, Josef: Load assumption for the landing impact of seaplanes.

— *See* Tender: An all-metal tender for seaplanes.

— *See* Verduzio, R.: Sollecitazioni alla partenza ed all'ammarramento negli idrovolanti.

— *See* Vest, John P. W.: Opportunities for seaplane flying on the Atlantic coast.

— *See* Wagner, Herbert: Landing of seaplanes.

— *See* Wagner, Herbert: Über die Landung von Seeflugzeugen.

— *See* William Froude National Tank: Report on experiments with model of seaplane float test with the S. 5 duralumin float. Model 807B.

SEATS. *See* Hertel, Heinrich: Stefigkeit, Festigkeit und Beanspruchung von Anschallgurten und Sesseln.

256 NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

SEATTLE PUBLIC LIBRARY. List of books on aeronautics in the Seattle Public Library.

Seattle, Public Library, Technology Division, 1931, pp. 60.

SEED, D. *See* Spencer, K. T., and D. Seed: Comparison of calculated and measured elasticity of the wings of an aircraft, in connection with the investigation of wing flutter.

SEEWALD, FRIEDRICH. Einige Probleme aus dem Arbeitsgebiet der Aerodynamischen Abteilung der DVL.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 1-22, ills., diagrs.

— Flugversuche mit Messenaben zur Bestimmung der aerodynamischen Eigenschaften der Luftfahrzeuge.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 13. Heft (14. Juli 1931), München und Berlin, pp. 405-410, diagrs.

— Flutter in propeller blades.

National Advisory Committee for Aeronautics, Technical Memorandums No. 642, Oct. 14, 1931, Washington, October 1931, pp. 15, diagrs.

— On floats and float tests.

National Advisory Committee for Aeronautics, Technical Memorandums No. 639, Sept. 24, 1931, Washington, September 1931, pp. 25, diagrs.

— Über die Schwingungerscheinungen an Lüftschrauben.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 12. Heft (29. Juni 1931), München und Berlin, pp. 369-374, ills., diagr.

— Über Schwimmer und Schwimmerversuche.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 9. Heft (15. Mai 1931), München und Berlin, pp. 265-276, Ill., diagrs.

SEEWALD, FRIEDRICH, und WALTER FEUCHT. Versuchsfahrten mit einem schnellfahrenden Schienenfahrzeug mit Lüftschraubenantrieb.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 22. Heft (28. Nov. 1931), München und Berlin, pp. 667-671, ills.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 59-63, ills., diagrs.

SEGAL, PAUL M. The regulation of amateur radio communication.

Air Law Review, Vol. 2, No. 2 (April 1930), New York, pp. 153-206.

SEGUIN, L. et A. Étude de hélices, des injecteurs et des moteurs en fonctionnement par la méthode stroboscopique et par le photographie au millionième de seconde.

L'Aéronautique, 13me année. No. 143, Bulletin l'Aérotechnique, 9e année, No. 100 (avril 1931), Paris, pp. 132-135, ills.

SEIFERTH, R. Berechnung von Lüftschrauben und Vergleich mit Versuchsergebnissen.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 3. Heft (14. Feb. 1931), München und Berlin, pp. 73-76, ills., diagrs.

SEILIGER, M. Les moteurs Diesel sans compresseur et les moteurs semi-Diesel. Traduit de l'allemand par A. Schubert.

Paris, Libr. Dunod, 1931, pp. xiii, 471.

SELGA, MIGUEL. The velocity of the wind at Manila, Baguio, Iloilo and Cebu. Manila, Bureau of Printing, 1931, pp. 35, ills., tabls., diagrs.

SEMPILL, COLONEL, the Master of (William Francis Forbes-Sempill). The air and the plain man.

London, E. Mathews & Marrot, 1931, pp. 134, ill. The library of new ideas, No. 3.

SEŃKOWSKI. Spadochrony.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Kwartalne Nr. 1, Warszawa, 19—.

SENO (DAL), GUIDO. I modelli volanti; teorie, costruzioni, esperienze.

Torino, r. Aero club d'Italia a aero club G. Lisa (Restelli), 1931, pp. 119.

SERRAGLI, G. Un singolare sistema di regolazione del passo delle eliche.

L'Aerotechnica, Vol. 11, n. 3 (marzo 1931), Roma, pp. 310-317, diagrs., tabl. English abstract, p. 391.

— Il moto di un molinello a pale orientabili posto in una corrente variabile.

L'Aerotechnica, Vol. 11, n. 5 (mag. 1931), Roma, pp. 557-570, diagrs., tabl. English abstract pp. 694-695.

SERVIÈS, JULIEN. *See* Blanchet, Georges: Personnalités contemporaines. Julien Serviès.

SERVO. *See* Hartshorn, A. S.: The application of the Servo principle to aileron operation.

SETTLE, T. G. W. Some recent aspects of rigid airships. Particulars regarding the Zeppelin type of metal-structure, fabric-covered, rigid airship and its British and American derivitives, with special reference to the structure, outer cover, gas cells, lifting gases, engines, power transmissions, and fuels, and to the naval and commercial roles of airships.

Mech. Eng., Vol. 53, No. 8 (Aug. 1931), New York, pp. 567-574, ills.

SEYDEL, EDGAR. Beitrag zum Gewichtsvergleich zwischen dreigurtigem und viergurtigem Flechtwerk.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 12. Heft (29. Juni 1931), München und Berlin, pp. 362-366, ills., diagrs.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 305-308, diagrs.

— Beitrag zur Berechnung viergurtiger Flechtwerke.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 289-304, ills., diagrs., tabls.

— Elastizitätstheorie des starren Luftschiffs.

Luftfahrtforschung, Vol. 9, No. 2, 1931, pp. 57-84.

— Schubknickversuche mit Wellblechtafeln.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 13. Heft (14. Juli 1931), München und Berlin, pp. 410-411, ill.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 233-245, ills., diagrs., tabls.

— Wrinkling of reinforced plates subjected to shear stresses.

National Advisory Committee for Aeronautics, Technical Memorandums No. 602, Jan. 26, 1931, Washington, January 1931, pp. 59, diagrs., tabls.

SEYDEL, JOS. Hanbuch für den Luftschutz: eine Zusammenstellung wissens-wertiger einzelheiten.

Diessen vor München, Verlag Jos. Huber, 1931, pp. 119, ills.

SEYMOUR, L. D. Maintenance of transport equipment.

Airway Age, Vol. 13, No. 5 (Aug. 1, 1931), New York, pp. 119-121.

SEVERINO, GIUSEPPE. Sulle determinazioni di posizione con una sola osservazione d'altezza.

Riv. Aer., Anno 7, n. 9 (sett. 1931), Roma, pp. 496-509, diagrs.

SEXTANT. *See* Tenani, M.: Un nuovo tipo di sestante per aeronautica.

SEXTON, RUSSELL W. Lambert—St. Louis airport.

Aero Digest, Vol. 19, No. 3 (Sept. 1931), New York, pp. 70, 94, ill.

— Lambert-St. Louis municipal airport of 1931.

U.S. Air Services, Vol. 16, No. 5 (May 1931), Washington, pp. 32-33, illus.

SEZAWA, KATSUTADA, and KEI KUBO. The buckling of a cylinder shell under torsion.

Report of the Aeronautical Research Institute, Tôkyô Imperial University, No. 76 (Vol. 6, 10), (Dec. 1931), Tôkyô, pp. 251-314, illus., diagrs., tabls.

SEZAWA, KATSUTADA. On the buckling under edge thrusts of a rectangular plate clamped at four edges.

Report of the Aeronautical Research Institute, Tôkyô Imperial University, No. 69 (Vol. 6, 3), (April 1931), Tôkyô, pp. 45-59, diagrs.

— On the lateral vibration of a rectangular plate clamped at four edges.

Report of the Aeronautical Research Institute, Tôkyô Imperial University, No. 70 (Vol. 6, 4), (April 1931), Tôkyô, pp. 61-70 diagrs.

SEZAWA, KATSUTADA, and GENROKURO NISHIMURA. Stresses under tension in a plate with a heterogeneous insertion.

Report of the Aeronautical Research Institute, Tôkyô Imperial University, No. 68 (Vol. 6, 2), (April 1931), Tôkyô, pp. 25-43, diagrs.

S-40. *See* Klemin, Alexander: Sikorsky's contribution to huge amphibions—the S-40.

— *See* Sikorsky: The Sikorsky S-40 amphibion.

SGARBI, GIUSEPPE. Importanza dell'esame psicologico nella scelta dei piloti.

Riv. Aer., Anno 7, N. 11 (nov. 1931), Roma, pp. 259-292, diagrs., tabl.

SHAFTS. *See* Capetti, A.: Sul calcolo dei periodi di oscillazione torsionale libera degli alberi.

SHARP, EDWARD R. An air journey de luxe.

Nat. Aer. Mag., Vol. 9, No. 12 (Dec. 1931), Washington, pp. 8-10, illus.

SHAW, B. RUSSELL. Foresight in airport design.

Aviation, Vol. 30, No. 5 (May 1931), New York, p. 308.

SHAW, SIR NAPIER. Manual of meteorology: Vol. IV: Meteorological calculus: Pressure and wind.

Cambridge, University Press, Macmillan, pp. 66, 359.

Vol. III, published in 1930.

SHEARING. *See* Seydel, Edgar: Schubknickversuche mit Wellblechtafeln.

SHERLOCK, R. H., and M. B. STOUT. An anemometer for a study of wind gusts.

Department of Engineering Research, University of Michigan, Ann Arbor, Engineering Research Bulletin, No. 20, May 1931, pp. 38, illus., diagrs.

SHERMAN, WILLIAM F. Aeronautics at the University of Detroit.

National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, pp. 11-12, 62, illus.

SHOCK absorbers. *See* Akron: Shock absorbers in the Akron.

SHORTAL, JOSEPH ADAMS. *See* Wenzinger, Carl Joseph, and Joseph A. Shortal: The aerodynamic characteristics of a slotted Clark Y wing as affected by the auxiliary airfoil position.

SIAM. A Siamese air line.

Flight, No. 1185, Vol. 23, No. 37 (Sept. 11, 1931), London, p. 927, ill.

SIBOUR, VICOMTE DE. Rapport sur un voyage de Paris à Pékin.

L'Aérophile, 39e année, No. 12 (15 déc. 1931), Paris, pp. 362-363.

SIBOUR, VICOMTE DE. *Un voyage.*

L'Aerophile, 39e année, No. 1 (15 jan. 1931), Paris, pp. 9-11, ills.

SIDESLIP. *See* Fuchs, Richard, and Wilhelm Schmidt: The dangerous sideslip of a stalled airplane and its prevention.

SIEMEN. Siemens flygmotorer.

Flygning, Årg. 9, N:R 7 (Juli 1931), Stockholm, pp. 132-133, ills.

SIGNS. Air signs.

Flight, No. 1174, Vol. 23, No. 26 (June 26, 1931), London, p. 579.

SIKORSKY. The Sikorsky S-40 amphibion.

Aero Digest, Vol. 19, No. 3 (Sept. 1931), New York, pp. 66-67, ills.

Aviation, Vol. 30, No. 10 (Oct. 1931), New York, pp. 594-598, ills.

— *See* Wind tunnels: Why a vertical wind tunnel.

SIKORSKY, IGOR. *See* Mounier, P. J. J.: Igor Sikorsky en zijn amphibievliegtuigen.

— *See* Olshevsky, Dimitry E.: A new vertical wind tunnel.

SILK. *See* Tanahashi, Keizo: Physical properties of raw silk.

SILVA, CAMILLO. La tecnica costruttiva degli aeroplani.

Torino, G. Lavagnolo, 1931, pp. 301, ills.

SILVER. *See* Gough, H. J., and H. L. Cox: Mode of deformation of a single crystal of silver.

SILVESTRI, ARMANDO. I metalli leggeri all'esposizione e Congresso Internazionale di Fonderia.

Riv. Aer., Anno 7, N. 12 (dic. 1931), Roma, pp. 499-513, ills.

— L'ultimo dirigibile italiano.

Riv. Aer., Ano 7, N. 9 (sett. 1931), Roma, pp. 478-484, ills.

SIMMONS, L. F. G. Experiments relating to the flow in the boundary layer of an airship model.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 198-204, diagrs. *Rep. Mem.* No. 1268 (Ae. 414.).

SIMMONS, L. F. G., and N. S. DEWEY. Wind tunnel experiments with circular discs.

Aer. Res. Comm., Rep. Mem., No. 1334, (Ae. 467), February 1930, London, 1931, pp. 6, ills., diagr.

SIMON, SIR JOHN ALLSEBROOK. *See* Great Britain: Report of the R. 101 inquiry. Presented by the Secretary of State for air to Parliament by command of His Majesty, March 1931.

— *See* R 101: R 101 Simon inquiry report. Disaster due to loss of gas.

— *See* R 101: The Simon report on R 101.

SIMS, C. A. British aircraft illustrated.

London, A. & C. Black, Ltd., 1931, pp. 95, ills.

SINBAD THE SAILOR. The contest from afloat.

Flight, No. 1186, Vol. 23, No. 38 (Sept. 18, 1931), London, pp. 942-950, ill.

SISKIN aircraft. *See* Jennings, W. G.: Tests of various controls fitted to a Siskin aircraft.

SKAN, SYLVIA W. *See* Cowley, W. L., and Sylvia W. Skan: A simplified analysis of the stability of aeroplanes.

— *See* Cowley, W. L., and Sylvia W. Skan: A study of polynomial equations.

SKAN, SYLVIA W. *See* Falkner, V. M., and Sylvia W. Skan: Some approximate solutions of the boundary layer equations.

SKERRY, E. Notes on the proof stress. A practical article on the meaning and use of the new method of testing material.

Aircraft Engineering, Vol. 3, No. 29 (July 1931), London, p. 162, diagr.

SKIN friction. *See* Fage, A., and V. M. Falkner: Relation between heat transfer and surface friction for laminar flow.

SLIP phenomena. *See* Gough, H. J., and H. L. Cox: Mode of deformation of a single crystal of silver.

SLOT, T. E. Ter nagedachtenis van H. Hindriks.

Het Vliegveld, 15de Jaarg., No. 7 (Juli 1931), Amsterdam, p. 231, ill.

SLOTS. *See* Haus, Fr.: Partances élevées et profils hypersustentateurs.

— *See* Haus, Fr.: L'utilisation pratique des procédés d'hypersustentation.

— *See* Jennings, W. G.: Experiments in lateral control. An account of tests with autoslots and interceptor and spoiling devices on the same aircraft.

— *See* Jones, F. T.: Flight tests on an Atlas fitted with automatic slots connected with the ailerons and some data relevant to the design of auto-slots for R.A.F. 28 section wing.

— *See* Jones, E. T., and C. E. Maitland: Stalled flight tests of a Moth fitted with auto control slots and interceptors.

— *See* Soulé, Hartley Akin: The effect of slots and flaps on the lift and drag of the McDonnell airplane as determined in flight.

— *See* Townend, H. C. H.: A study of slots, rings & boundary layer control by blowing.

— *See* Townend, H. C. H.: A study of slots, rings and jet control of the boundary layer.

SLOTTED WINGS. *See* Alston, R. P.: Stalled flight tests on a Bristol fighter fitted with auto control slots and interceptors.

— *See* Clark, K. W.: The motions, at a stall, of a Bristol fighter aeroplane with slot and aileron control on both planes.

— *See* Haus, Fr.: The use of slots for increasing the lift of airplane wings.

— *See* Pleines, Wilhelm: Flugmessungen über den Einfluss von Hadley-Page-Schlitzquerrudern.

— *See* Schrenk, Oskar: Versuche mit einem Absaugeflügel.

— *See* Wings: L'ala a fessura e la sicurezza aerea.

SMITH, ELINOR. *See* Records: Nouveaux records homologués par la F.A.I.

SMITH, WESLEY LELAND. Air transport operation.

New York and London, McGraw-Hill Book Company, inc., 1931, pp. ix, 316, illus., diagrs.

SMITHOWSKI, JOHN G. Construction and care of storage batteries.

Aviation Engineering, Vol. 5, No. 5 (Dec. 1931), Washington, N.J., pp. 43-44.

SMOKE. *See* Whytlaw-Gray, R., and H. S. Patterson: Smoke. A study of aerial disperse systems.

SMOKE pots. Smoke pots and other airport aids.

Western Flying, Vol. 10, No. 5 (Nov. 1931), Los Angeles, Calif., p. 19, ills.

SMOKE screens. *See* Birnn, Roland: Smoke screens from the sky.

SMOKE-SCREEN MATERIAL. *See* United States, Office of Chief of Air Corps: Instructions for handling titanium tetrachloride, smoke-screen material. Prepared under direction of the Chief of Air Corps.

SNIJDERS, C. J. Nederland's plaats in het wereldluchtverkeer.

Het Vliegveld, 15de Jaarg., No. 9 (Sept. 1931), Amsterdam, p. 312.

SNOWDEN GAMBLE, CHARLES FREDERICK. The air weapon, being some account of the growth of British military aeronautics from the beginnings in the year 1783 until the end of the year 1929.

London, H. Milford, Oxford University Press, 1931, pp. 300.

SOARING. Une réglementation très complète du vol sans moteur, vient d'être établie en Suisse.

L'Aérophile, 39e année, No. 4 (15 avril 1931), Paris, pp. 113-114, ill.

— Richtlinien für den Bau von Gleit- und Segelflugzeugen. Bearbeitet von der Technischen Kommission der Rhön-Segelflug-Wettbewerbe.

Frankfurt a.M., Selbstverlag der R.R.G., pp. 27.

— Le vol remorqué.

L'Aérophile, 39e année, No. 10 (15 oct. 1931), Paris, p. 206, ills.

— *See* Barnaby, Hattie Meyers: Let's go to the Elmira soaring meet!

— *See* Bartocci, Enzo: Rassegna delle teorie enunciate e degli studi svolti sino ad oggi sul volo a vela.

— *See* Bossolasco, Mario: La meteorologia ed il volo a vela.

— *See* Debus, W.: Mit zehn Liter Benzin von Köhn zum Bodensee? Das kommende Volksflugzeug.

— *See* Dominicus, D.: Warum Gleit- und Segelflug in Deutschland?

— *See* Falke: Das Segelflugzeug "Falke" der R.R.G.

— *See* Fuchs, Otto: Segelflug in der Ebene.

— *See* Georgii, Walter: Bericht über den 11. Rhön-Segelflug-Wettbewerb.

— *See* Georgii, Walter: Eleventh Rhön soaring-flight contest.

— *See* Gliding.

— *See* Groenhoff, Gunther: 265 km motorlos.

— *See* Helbig, Hans: Jahres-Statistik 1930 (vom 1. 1. bis 31. 12. 1930) des Jugend- und Segelflugausschusses des DVL.

— *See* Hentschel: Neuer Segelflug-Record auf dem Dörnberggelände bei Kassel: 11 Std. 1. Min.

— *See* Hirth, Wolfram K. E., Martin H. Schempp, and Jack Herrick: Elmira soaring contest, 1930.

— *See* Italiaander, Rolf: So lernte ich Segelfliegen.

— *See* Kronfeld, Robert: Wärmesegeln, ein neuer Flugsport.

SOARING. *See* Maas, H. J. van der: *Bezoek aan Rossitten en wasserkuppe*.
 — *See* Matthias, Joachim: *Das neue Segelfluglager auch über der Nordsee*.
 — *See* O'Meara, J. K. (Jack): *The 1931 Rhoen soaring contest at the Wasserkuppe*.
 — *See* Patterson, John McClure: *At the famous Wasserkuppe*.
 — *See* Roseck, Erich: *Segelflygning—Trysklands nyaste sport*.
 — *See* Schempp, Martin: *Cloud hopping in soaring flight*.
 — *See* Stoklitzky, von: *Segelflug-Wettbewerb 1929 in der UdSSR*.
 — *See* Taub, Josef: *Beitrag zur Frage der Belastungsannahmen für den Landüngsstoss von Segelflugzeugen*.
 — *See* Walker, Donald F.: *Bringing soaring up-to-date*.
 — *See* Wateau, André: *Le programme du vol sans moteur en France*.
 — *See* Winkler, Horst: *Das Hochleistungs-Segelflugmodell*.

SOCIETA ANONIMA RILEVAMENTI AEROFOTOGRAFMETRICI. Rome. *Il metodi aerofotogrammetrico "Nistri" e le sue—pratiche applichezioni*.

SOCIETY OF AUTOMOTIVE ENGINEERS. *Structural problems and the S.A.E. Aviation*, Vol. 30, No. 10 (Oct. 1931), New York, pp. 591-593, diagrs.

SOKOLCOW, DYMITYR, i JERZY BYLEWSKI. *Wyniki 2 serji badan nad rozchodem się fal krótkich*.

Instytut Badań Technicznych Lotnictwa, *Sprawozdanie kwartalne Nr. 5 (Nr. 22)*, Warszawa, 1931, pp. 29-54, ills., diagrs., tabls., map.

SONNTAG. *Der Freiballonsport in Zahlen*.

Luftschau, 4. Jahrg., Nr. 5 (10. März 1931), Berlin, p. 37.

SORIANO Y VIGUERA, J. *La moderna fotogrametría automática*.
 Iberica, Año 18, Núm. 875 (25 abril 1931), Barcelona, pp. 264-269, ill.

SOULÉ, HARTLEY AKIN. *The effect of slots and flaps on the lift and drag of the McDonnell airplane as determined in flight*.

National Advisory Committee for Aeronautics, *Technical Notes No. 398*, Nov. 10, 1931, Washington, November 1931, pp. 12, ills., diagrs., tabls.

SOULÉ, HARTLEY AKIN, and NATHAN FROST SCUDDER. *A method of flight measurement of spins*.

National Advisory Committee for Aeronautics, *Report No. 377*, May 23, 1931, Washington, U.S. Government Printing Office, 1931, pp. 18, ills., diagrs., tabls.

SOULÉ, HARTLEY AKIN. *See* Miller, Marvel P., and Hartley A. Soulé: *Moments of inertia of several airplanes*.

SOUND. *See* Hart, Morris D.: *The aeroplane as a source of sound*.

— *See* Parker, A. E.: *Horsepower at speed of sound*.
 — *See* Theodorsen, Theodore: *A new principle of sound frequency analysis*.

SOUNDING BALLOONS. *See* Samuels, L. T.: *Sounding-balloon releasing device*.

SOUNDPROOFING. *See* United States Department of Commerce, Aeronautics Branch: *Reduction of airplane noise*. October 1, 1930.

SOUTH AFRICA. *Verordnung. Luftfahrtverordnung vom 9. August 1929*.
Nachrichten für Luftfahrer, 12. Jahrg., Nr. 13-14 (4. April 1931), Berlin, pp. 90-91.

SOUTH AMERICA. British activities in South America.

Aeroplane, Vol. 40, No. 15 (April 15, 1931), London, pp. 677-678, 680, ills.

— Per vliegtuig van Zuid-naar Noord Amerika.

Het Vliegveld, 15de Jaarg., No. 5 (Mei 1931), Amsterdam, pp. 160-163, ills., map.

SOUTH POLE. *See* Byrd, Richard Evelyn: Little America: Aerial exploration in the Antarctic and the flight to the South Pole.

SOUTHERN AIRCRAFT. The metal "Martlette."

Flight, No. 1167, Vol. 23, No. 19 (May 8, 1931), London, p. 399, ills.

SOUTHAMPTON seaplane. *See* Crough, A. S.: Measurement of lift and drag of Southampton seaplane.

SOUTHWELL, R. V., and LETITIA CHITTY. On the problem of hydrodynamic stability.—I. Uniform shearing motion in a viscous fluid.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 81-134, diagrs. Rep. Mem. No. 1200.

SOUTHWELL, R. V. *See* Chitty, L., and R. V. Southwell: A contribution to the analysis of primary stresses in the hull of a rigid airship.

SPAIN. Verordnung betreffend den Betrieb der Hafenflughäfen Kap Juby und Villa Cisneros.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 10-11 (14. März 1931), Berlin, pp. 67-68.

SPANISH AMERICA. El progreso de la aviación en la América española.

Iberica, Año 18, Núm. 864 (7 feb. 1931), Barcelona, pp. 83-85.

— *See* International American Conference: Commercial aviation. Convention between the United States of America and other American Republics. Signed at Habana, February 20, 1928.

SPANNER, EDWARD FRANK. The tragedy of "R. 101".

London, E. F. Spanner, 1931, 2 vols., ills., maps, diagrs.

SPANNHAKE, W. Kreiselpumpen und Turbinen.

Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 3. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1930, pp. 265-319, ills.

SPANOGLE, J. A., and H. H. FOSTER. Basic requirements of fuel-injection nozzles for quiescent combustion chambers.

National Advisory Committee for Aeronautics, Technical Notes No. 382, June 23, 1931, Washington, June 1931, pp. 6, diagrs.

SPANOGLE, J. A., and G. T. HEMMETER. Development of an impinging-jet fuel-injection valve nozzle.

National Advisory Committee for Aeronautics, Technical Notes No. 372, April 21, 1931, Washington, April 1931, pp. 9, ills., diagrs.

SPANOGLE, J. A., and E. G. WHITNEY. The effectiveness of a double-stem injection valve in controlling combustion in a compression-ignition engine.

National Advisory Committee for Aeronautics, Technical Notes No. 402, Dec. 15, 1931, Washington, December 1931, pp. 19, diagrs.

SPANOGLE, J. A., and H. H. FOSTER. Fuel injection of Diesel engines. Performance of a high-speed compression ignition engine using multiple-orifice fuel injection nozzles.

Aircraft Engineering, Vol. 3, No. 23 (Jan. 1931), London, pp. 19-21, ills., diagrs.

SPANOGLE, J. A., and C. S. MOORE. Performance of a compression-ignition engine with precombustion chamber having high-velocity air flow.

National Advisory Committee for Aeronautics, Technical Notes No. 396, Nov. 14, 1931, Washington, October 1931, pp. 15, ills., diagrs.

SPARK PLUG. *See* King, R. O., and H. Moss: Detonation, spark-plug position, and engine speed.

SPARKS, REGINALD BRABANT. *See* Wingfield, Lawrence Arthur, and Reginald Brabant Sparks: The law in relation to aircraft.

SPARS. *See* Struts.

— *See* Swickard, Andrew E.: Metal-truss wing spars.

— *See* Williams, D.: A graphical method of stressing aeroplane spars.

SPEED. Calculating maximum speed of airplanes.

Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 55-57.

— *See* Courtney, Frank T.: Speed in air transport.

— *See* Dupuy, P.: Aeroplane speed characteristics. An attempt to elucidate theory in practical terms for the aeroplane pilot.

— *See* Jennings, W. G.: "Cornering" at high speeds.

— *See* Peters, H.: Effect of viscosity in speed measurements with double-thrust venturi tubes.

— *See* Pistolesi, E.: Correnti e azioni dinamiche a velocità molto elevate.

— *See* Races: Speed and the races.

— *See* Schneider trophy: 379 miles per hour.

— *See* Stainforth, G. H.: Speed's new "High"; 404 miles per hour.

— *See* Taylor, G. I.: The flow of air at high speeds past curved surfaces.

— *See* Weems, Philip Van Horn: The Gatty ground speed and drift indicator.

— *See* Wertenson, F.: Development of the high-speed all-wing monoplane.

— *See* Wimperis, H. E.: High-speed flying.

SPEED indicators. Record engine speed indicators.

Flight, No. 1187, Vol. 23, No. 39 (Sept. 25, 1931), London, pp. 869-870, illus.

SPEED measurement. *See* Dzwonkowski, Kazimierz: Sondy do powiarów szybkości samolotu.

SPENCER, K. T. On the effect of altitude upon the distance required for an aircraft to take off and climb 20 meters giving generalized curves of weight reduction necessary if a given aircraft is to comply with the requirements of A.P. 1208 under adverse atmospheric conditions.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 531-539, diagrs., tabl. Rep. Mem. No. 1307. (Ae. 447.)

SPENCER, K. T., and D. SEED. Comparison of calculated and measured elasticity of the wings of an aircraft, in connection with the investigation of wing flutter.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 647-655, diagrs., tabls. Rep. Mem. No. 1257. (Ae. 406).

SPINNING. Safety in spinning.

Flight, No. 1195, Vol. 23, No. 47 (Nov. 20, 1931), London, pp. 1159-1160.

SPINNING Spinning.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 33-35.

- See Batson, A. S., H. B. Irving, and S. B. Gates: Spinning experiments on a single seater fighter. Part I.—Further model experiments, by A. S. Batson and H. B. Irving; Part II.—Full scale spinning tests, by S. B. Gates.
- See Irving, H. B., A. S. Batson, and A. L. Maidens: Rolling and sideslip experiments on a model slotted biplane of R. A. F. 31 section.
- See Irving, H. B., and A. S. Batson: Spinning of a model of the Fairey IIIIf seaplane.
- See Scott-Hall, S.: The spinning of aeroplanes.
- See Stephens, A. V.: Free-flight spinning experiments with several models.
- See Stephens, A. V.: Free model spinning researches. Experiments in the balloon shed at Farnborough and a description of the vertical wind tunnel.
- See Williams, D.: Forces on the engine mounting of a spinning aircraft.
- See Wright, K. V.: Experiments on the spinning of a Bristol fighter aeroplane.

SPIN. See Fuchs, Richard, and Wilhelm Schmidt: The dangerous flat spin and the factors affecting it.

- See Fuchs, Richard, and Wilhelm Schmidt: The steady spin.
- See Gates, S. B.: Measured spins on aeroplane H.
- See Soulé, Hartley Akin, and Nathan Frost Scudder: A method of flight measurement of spins.

SPIT, G. Amsterdam-Batavia met Zeppelins.

Het Vliegveld, 15de Jaarg., No. 4 (April 1931), Amsterdam, pp. 124-125.

SPRIGG, CHRISTOPHER. The airship, its design, history, operation and future. London, S. Low, Marston & Co., Ltd., 1931, pp. viii, 248, ills.

- See Davis, H. D., and C. Sprigg: Fly with me.

SPRINGS. See Zoja, R.: Sul calcolo delle molle per valvole dei motori d'aviazione.

SPRUCE. See Kozanecki, Stefan: Badanie świerka górskego z Worochty.

- See Laski, Jaroslaw: Badanie świerka górskego z Worochty.

S. 6 B. See Vickers: The supermarine S. 6 B monoplane. Main particulars published for the first time.

S. 64. Relazione finale della commissione d'inchiesta sull'incidenti dell'apparecchio S. 64.

Riv. Aer., Supplemento, Anno. 7, n. 8 (agosto 1931), Roma, pp. 121, ills.

STABILITY. Stability and control.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 28-32.

- See Anxionnaz, René: Stabilisateur. Brevet français, n. 165,203, déposé le 20 octobre 1922, par M. René Anxionnaz.
- See Bryant, L. W., and A. S. Halliday: Measurement of lateral derivatives of the whirling arm.
- See Budig, F.: La stabilisation marine des hydravions par plans de dérive.

STABILITY. *See* Cowley, W. L., and Sylvia W. Skan: A simplified analysis of the stability of aeroplanes.

- *See* Cowley, W. L., and Sylvia W. Skan: A study of polynomial equations.
- *See* Glauert, H.: The force and moment on an oscillating aerofoil.
- *See* Glauert, H.: The stability of a body towed by a light wire.
- *See* Halliday, A. S., and C. H. Burge: Lateral stability calculations for the Bristol fighter aeroplanes.
- *See* Halliday, A. S.: Stability derivatives of the Bristol fighter.
- *See* Haus, Ch.: Stabilité et maniabilité des avions.
- *See* Haus, Frédéric Ch.: Stabilité et maniabilité des avions.
- *See* Hübner, Walter: Ergebnisse von Messungen der Stabilität um die Querachse.
- *See* Jennings, W. G.: Directional stability of high speed aircraft.
- *See* Jones, E. T.: The full scale determination of the lateral resistance derivatives of the Bristol fighter aeroplane. Part III.—The determination of the rate of roll derivatives.
- *See* Jones, E. T.: The lateral stability of the Gloster IIIB seaplane with controls fixed and with directional control.
- *See* Jones, E. T., and R. P. Alston: Longitudinal control and stability when stalled.
- *See* Kiel, Heinrich Georg: Static longitudinal stability of "Ente" airplanes.
- *See* Lapresle, A.: The aerodynamic wind vane and the inherent stability of airplanes.
- *See* Margoulis, W.: Le prix de la stabilité longitudinale de l'avion et du "canard."
- *See* Marmonier, L.: La stabilità e il comando automatico dei velivoli.
- *See* Marmonier, L.: La stabilité et la direction automatiques des avions.
- *See* Minelli, Carlo: Sull'equilibrio longitudinale del velivolo ad ala deformabile.
- *See* Töpfer, Carl: Auftriebsverteilung und Längsstabilität.
- *See* Töpfer, Carl: Lift distribution and longitudinal stability.

STACK, JOHN. Tests in the variable density wind tunnel to investigate the effects of scale and turbulence on airfoil characteristics.

National Advisory Committee for Aeronautics, Technical Notes No. 364, Feb. 10, 1931, Washington, February 1931, pp. 15, ill., diagrs.

STAGGER-DECALAGE. *See* Merrill, Albert A.: The stagger-decalage biplane.

STAHLBERG, MAX. Organisation und betriebswirtschaftliche Grundprobleme der deutschen Handelsluftfahrt.

Hofheim, Buchdruckerei Mitter & Kinkel, 1931, pp. 106.

STAINFORTH, G. H. Speed's new "High": 404 miles per hour.

The Literary Digest, Vol. 110, No. 13 (Sept. 26, 1931), New York, pp. 38-39, port.

STAINFORTH, G. H. *See* Records: Four hundred miles an hour.

STAINLESS steel. Stainless steel airplane.

Aero Digest, Vol. 19, No. 6 (Dec. 1931), New York, p. 60, ill.

STALKER, EDWARD ARCHIBALD. Principles of flight; a college text on aeronautical engineering.

New York, The Ronald Press Company, 1931, pp. xviii, 428, illus., diagrs.

STALL. *See* Barros: The Barros stall warning device.

— *See* Control and Stability.

— *See* Control: Control beyond the stall.

STALLED flight. *See* Alston, R. P.: Stalled flight tests on a Bristol fighter fitted with auto control slots and interceptors.

STALLING. *See* Clark, K. W.: The motions, at a stall, of a Bristol fighter airplane with slot and aileron control on both planes.

— *See* Jones, E. T., and R. P. Alston: Longitudinal control and stability when stalled.

STAMER, FRITZ. Gleit- und segelflugschulung.

Berlin-Charlottenburg, C. J. E. Volckmann nachf. g. m. b. h. [1931], pp. 48, illus. Flugzeugbau und Luftfahrt, Heft 17.

STAMER, FRITZ, und A. LIPPISCH. Gleitflug und Gleitflugzeuge. Teil II. Bauanweisungen und Bauzeichnungen.

Berlin-Charlottenburg, Verlag C. J. E. Volckmann Nachf. G. m. b. H., 1931, pp. 24, illus. Heft 12 der Sammlung Flugzeugbau und Luftfahrt.

STAMER, Fr. Die Wasserkuppe im Jahre 1931.

Luftschau, 4. Jahrg., Nr. 24 (24. Dez. 1931), Berlin, pp. 136-137.

STANAVO SPECIFICATIONS BOARD, INC. Stanavo pilot's handbook.

New York, Stanavo Specifications Board, inc., 1931, pp. 88, maps., tabls.

STANDARD OIL COMPANY OF CALIFORNIA. Landing fields of the Pacific west.

San Francisco, 1931, pp. 99, illus., maps.

STANDARDS. *See* Army-Navy: A N standards conference.

— *See* British Standards Institution: British Standards Institution.

STANHOPE, T., and A. THOMPSON. Who's who in British aviation, 1931.

London, Airways Publications, Ltd.

STANLEY, CHARLES M. Modern parachutes.

The Take-Off, Vol. 3, No. 1 (March 1931), Washington, p. 4.

STANTON, T. E. On the distribution of pressure over a symmetrical Joukowski section at high speeds.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 294-296, illus., diagrs., tabl.

— Tests under conditions of infinite aspect ratio of 4 aerofoils in a high speed wind channel.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 290-293, diagrs., tabls. Rep. Mem. No. 1279 (Ae. 425).

— Velocity in a wind channel throat.

Aer. Res. Comm., Rep. Mem., No. 1388 (Ae. 510-T. 2956), May 1930, London, 1931, pp. 3, diagrs., tabl.

STAPP, JAMES ADAIR. Public altitude flights make busy airports.
Airway Age, Vol. 13, No. 1 (Jul. 4, 1931), New York, pp. 49-50, ills.

STARK, HOWARD CYRUS. Blind or instrument flying? Instruction book.
Newark, N.J., 1931, pp. 31, ills.

STATAX. See Hansen, F.: Der Statax-Halbdiesel-Flugmotor.

STATICS. See Thalau, Karl: Aufgaben der Luftfahrzeug-Statik.

STATISTICS. See Byoir, Carl: Graphic facts about aviation. March 1, 1931.
Compiles by Carl Byoir & associates.

STEEL. See Handasyde, G. H.: Steel tube and strip. The works of Armstrong-
Whitworth aircraft at Coventry visited and described.

— See Hartmann, E. C.: Comparison of weights of 17ST and steel tubular
structural members used in aircraft construction.

— See Hatfield, W. H.: Rustless steels as applied to automobiles and
aircraft.

— See Lafont, A.: Aceros para aviación y automovilismo.

— See Nakanishi, Fujio: On the yield point of mild steel.

STEEL, W. A. Communication on civil airways in Canada.
Engineering Journal, Vol. 14, No. 7 (July 1931), pp. 409-415, ills.

STEEL beams. See Knerr, H. C., and H. A. Backus: Development of steel wing
beams for aircraft.

STEELE, DUDLEY. Searching from the air.

Western Flying, Vol. 9, No. 5 (May 1931), Los Angeles, Calif., pp. 32-34, ills.

STEELE, DUDLEY M. The closed course events at the National Air Races.
Western Flying, Vol. 10, No. 4 (Oct. 1931), Los Angeles, Calif., pp. 14-15.

— Using the airplane for business purposes.

Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 50-51, 122, ills.

STEEWEN, O. P. van. Von der photographischen Flinte zum kinematographi-
schen Maschinengewehr.
Die Umschau, 35. Jahrg., Heft 41 (10.Okt. 1931), Frankfurt a.M., pp. 818-819, ills.

STEINER, HANS. Der Fallschirm als rettungsmittel, zum lastenabwurf und
seine verwendung als flugzeugsicherung.

Berlin, R. C. Schmidt & Co., 1931, pp. vii, 107, ills.

Bibliothek für Luftschiffahrt und Flugtechnik, Bd. 28.

STEINHAUER, EARL. Rambling reminiscence and right up to date.
U.S. Air Services, Vol. 16, No. 11 (Nov. 1931), Washington, D.C., pp. 19-21.

STELZER, E. See Dobrowolny, Otto, and E. Stelzer: Der menschliche flug; eine
gemeinverständliche darstellung mit einer führung durch die abteilung
"Luftfahrt" des Technischen museums in Wien.

STEPHEN, von. Generalpostmeister Dr. von Stephen und die Luftfahrt.
Luftschau, 4. Jahrg., Nr. 1 (10. Jan. 1931), Berlin, p. 6.

STEPHENS, A. V. Free-flight spinning experiments with several models.
Aer. Res. Comm., Rep. Mem., No. 1404 (Ae. 525-Spin 62), April 1931, London, 1931, pp. 12,
ills., diagrs., tabl.

— Free-model spinning researches. Experiments in the balloon shed at
Farnborough and a description of the vertical wind tunnel.
Aircraft Engineering, Vol. 3, No. 31 (Sept. 1931), London, pp. 213-215, ills.

STEREOGONIOMETER. *See* Hotine, Martin: The Fourcade stereogoniometer.

STERN, W. J. *See* Nayler, J. L., and E. Ower: Aviation of to-day; its history and development; with a chapter on aircraft engines by W. J. Stern.

STEVEN, A. W. Flying the "Hump" of the Andes.

National Geographic Magazine, Vol. 59, 1931, Washington, D.C., pp. 595-636.

STEVENS, FREDERICK WILEY. The gaseous explosive reaction—the effect of pressure on the rate of propagation of the reaction zone and upon the rate of molecular transformation.

National Advisory Committee for Aeronautics, Report No. 372, Feb. 28, 1931, Washington, U.S. Government Printing Office, 1930, [1931], pp. 19, ills., diagrs.

STEVENS, H. L. Testing aeroplane controls.

Journ. Roy. Aer. Soc., Vol. 35, No. 242 (Feb. 1931), London, pp. 96-120, ills., diagrs.

STEVENS, H. L., and A. E. WOODWARD NUTT. Charts for aircraft performance reduction.

Aeronautics, Tech. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 441-459, diagrs., tabls. Rep. Mem. No. 1316. (Ae. 453.)

STEWART, A. T. Regional aviation conferences.

Journal of Air Law, Vol. 2, No. 1 (Jan. 1931), Chicago, pp. 29-34.

STEWART, C. J. Determination of position in high latitudes, with particular reference to aircraft observation.

Nature, Vol. 128, No. 3223 (Aug. 8, 1931), London, pp. 212-214.

— High altitude flying.

Aircraft Engineering, Vol. 3, No. 26 (April 1931), London, pp. 87-92.

STEWART, OLIVER. Cross-country flying.

New York, R. R. Smith, inc., 1931, pp. ix, 116, ills., diagrs.

— Flying as a career; a popular guide for all proposing to obtain a position in the new industry as a pilot, navigator, or aircraftman.

London, New York, Sir I. Pitman & Sons, 1931, pp. ix, 81, ills.

— Single or twin-engined day bombers?

Aviation, Vol. 30, No. 6 (June 1931), New York, pp. 344-346, ills.

STIEGLITZ, ALBERT. Der DVL-Torsiograph, ein Drehschwingungs-Messgerät für Fahrzeugmotoren.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 2. Heft (28. Jan. 1931), München und Berlin, pp. 49-52, ills., diagrs.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin 1931, pp. 358-361, ills., diagrs.

STIERI, EMANUEL. *See* Gernsback, Hugo, and Emanuel Stieri: Aviation mechanics.

STIMSON, THOMAS E., Jr. Aviation in the high schools.

Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Calif., pp. 24-27, ills.

— Aviation in the universities.

Western Flying, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Calif., pp. 24-26, ills.

— One third down. The chief obstacle to financing airplane sales is insurance. This and other problems are discussed in this article.

Western Flying, Vol. 10, No. 3 (Sept. 1931), Los Angeles, Calif., pp. 15-17.

— Pilots—Plane buyers of 1931.

Western Flying, Vol. 9, No. 4 (April 1931), Los Angeles, Calif., pp. 38-41, port.

— Team work in production.

Western Flying, Vol. 9, No. 3 (March 1931), Los Angeles, Calif., pp. 42-46, ills.

STIMSON, THOMAS E., Jr. Why the Dycers succeed.
Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Calif., pp. 46-47, 91 ill., ports.

STIPA, LUIGI. Aerei per voli alle alte quote.
Riv. Aer., Anno 7, N. 12 (dic. 1931), Roma, pp. 492-498, ill.

— L'ala a turbina.
Riv. Aer., Anno 7, N. 6 (giugno 1931), Roma, pp. 436-441, ill.
L'Aerotecnica, Vol. 11, No. 4 (Aprile 1931), Roma, pp. 411-418, ill.
English abstract, pp. 501-502.

— Esperienze con eliche intubate.
L'Aerotecnica, Vol. 11, No. 8 (agosto 1931), Roma, pp. 923-953, ill., diagrs.
English abstract, p. 1064.

STITH, RICHARD LEWIS. See Kirsten, Frederick Kurt, Harold Lamont Adams and Richard Lewis Stith: Venturi wind tunnel number 1—

STOCKHOLM. Der dritte internationale Kongress für technische Mechanik Stockholm 1930.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 2. Heft (28. Jan. 1931), München und Berlin, pp. 44-46.

— Den första internationella säkerhetskongressen.
Flygning, Årg. 9, N: R 1 (Jan. 1931), Stockholm, p. 1.

— Hur I L I S kommer till.
Flygning, Årg. 9, N: R 4 o. 5 (April-Maj 1931), Stockholm, p. 74-75, ill.

— I L I S och dess utställare.
Flygning, Årg. 9, N: R 4 o. 5 (April-Maj 1931), Stockholm, pp. 72-73, diagr.

— I.L.I.S. The Stockholm International Aero Show, May 15-31, 1931.
Flight, No. 1168, 1169, 1170, Vol. 23, No. 20, 21, 22 (May 15, 22, 29, 1931), London, pp. 421, 447-450, 472-475, ill.

— I L I S utställningen.
Flygning, Årg. 9, N: R 6 (Juni 1931), Stockholm, pp. 110-113, 126, ill.

— Internationella luftfartsutställningen.
Flygning, Årg. 9, N: R 3 (Mars 1931), Stockholm, pp. 52, 55, ill.

— De nordiska flygtävlingarna i Stockholm.
Flygning, Årg. 9, N: R 2 (Febr. 1931), Stockholm, p. 25.

— Stockholms flygklubb.
Flygning, Årg. 9, N: R 11 (Nov. 1931), Stockholm, pp. 216-217, ill.

— Tidigare luftfartsutställningar och Tävlingar. En liten historik.
Flygning, Årg. 9, N: R 4 o. 5 (April-Maj 1931), Stockholm, pp. 84-85, ill.

— See Ekwall, G.: Stockholms blivande lantflytplats i bromma.

STOCKS, KÄTE und RUDOLF STOCKS. See Holzapfel, Karl Maria, Käte und Rudolf Stocks: Frauen fliegen; sechzehn deutsche pilotinnen in ihren leistungen und abendteuern . . . mit einem geleitwort von Herman Köhl.

STOKES, P. H. Performance of a compression ignition unit with reduced intake and exhaust pressures.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1123-1144, ill., diagrs., tabls. Rep. Mem. No. 1328 (E. 38).

STOKLITZKY, VON. Segelflug-Wettbewerb 1929 in der UdSSR.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 11. Heft (15. Juni 1931), München und Berlin, pp. 335-336, Ills., tabls.

STOUT. The Stout "Sky Car."

Flight, No. 1164, Vol. 23, No. 16 (April 17, 1931), London, p. 334, ill.

STOUT, M. B. *See* Sherlock, R. H., and M. B. Stout: An anemometer for a study of wind gusts.

STRAINS AND STRESSES. *See* Teichmann, Alfred: Zur berechnung auf knickbiegung beanspruchter flugzeug holme.

STRATOSPHERE. *See* Bally, J.: Piccard & Kipfer. Comment ils ont pu réaliser en cabine étanche leur ascension dans la stratosphère.

— *See* Farman: The Farman "Stratospheric" aeroplane.

— *See* H., H.: Professor Piccard over zijn hoogtevaart. Gevangenen der stratosfeer.

— *See* Junkers: Flight in the stratosphere.

— *See* Junkers: Das Stratosphärenflugzeug von Junkers.

— *See* Piccard, Auguste: L'ascension du professeur Piccard.

— *See* Piccard, Auguste: Der Höhenballon von Professor Piccard.

— *See* Piccard, Auguste: Le livre de bord du professeur Piccard.

— *See* Piccard, Auguste: Met professor naar de stratosfeer.

— *See* Piccard, Auguste, y Paul Kipfer: Tentativas del professor Picaard y otros esfuerzos para el conocimiento de la estratosfera.

— *See* Raffaelli, Italo: Apparati motori a vapore per la navigazione stratosferica.

STRATTON, J. A., and H. G. HOUGHTON. A theoretical investigation of the transmission of light through fog.

Physical Review, Vol. 38, No. 1 (July 1, 1931), Minneapolis, pp. 159-165.

STRATTON, SAMUEL W. Dr. Samuel W. Stratton.

U.S. Air Services, Vol. 16, No. 11 (Nov. 1931), Washington, D.C., p. 41.

STREAMFLOW. *See* Kunz, Jakob: Some examples of dimensional analysis.

— *See* Mueller, H., und H. Peters: Geschwindigkeits- und Mengenmessungen von Flüssigkeiten.

STREAMLINE. *See* Ower, E., and C. T. Hutton: The drag of small streamline bodies.

— *See* Prandtl, L.: Einführung in die Grundbegriffe der Strömungslehre.

— *See* Tietjens, O.: Beobachtung von Strömungsformen.

— *See* Tollmien, W.: Turbulente Strömungen.

STREAMLINE NACELLE. *See* Ower, E., and C. T. Hutton: Interference of a streamline nacelle on a monoplane wing.

STRENGTH TESTS. *See* Rhode, Richard V., and Eugene E. Lundquist: Strength tests on paper cylinders in compression, bending, and shear.

STRESSES. *See* Evans, F. G.: The method of "least work" and the stressing of aeroplane structures.

— *See* Sezawa, Katsutada, and Genrokuro Nishimura: Stresses under tension in a plate with a heterogeneous insertion.

STRIJKERS, A. Radioproeven op de Holland—Indië route.
Het Vliegveld, 15de Jaarg., No. 3 (Maart 1931), Amsterdam, pp. 76-79, ills., map.

STRINGFELLOW, JOHN. *See* Davy, M. J. B.: Henson and Stringfellow, their work in aeronautics; the history of a stage in the development of mechanical flight, 1840-1868.

STROBORAMA. *See* Jacuński, Julian: Stroborama.

STRUCTURES. *See* Van den Broek, John Abraham: Elastic energy theory.

STRUT SYSTEMS. *See* Teichmann, Alfred: Spatial buckling of various types of airplane strut systems.

STRUTS. *See* Hartshorn, A. S.: Wind tunnel tests of seven struts.

— *See* Oleo strut: Dynamic test of long stroke oleo strut with compensating valve.

— *See* Parkinson, H.: Strut fairing.

— *See* Spars.

— *See* Ward, Kenneth E.: Interference effects and drag of struts on a monoplane wing.

STRYK, HEINRICH VON. Rigging lines for parachutes. A suggested alternative to silk or hemp.
Aircraft Engineering, Vol. 3, No. 33 (Nov. 1931), London, p. 280, ill.

STUBBLEFIELD, BLAINE. Man behind the wings.
U.S. Air Services, Vol. 16, No. 1 (Jan. 1931), Washington, pp. 27-29.

STUDLEY, BARRETT. Learning to fly for the Navy.
New York, The Macmillan Company, 1931, pp. x, 257, ills.

STÜCKLE, ROBERT. Uhlands Ingenieur-Kalender 1932.ü
Leipzig, Verlag Alfred Kröner, 1931, pp. 1040, ills.

STURM, FRITZ, und M. SCHIRMER. Triebwerkanlage mit Vorgelege im Luftschiff "Graf Zeppelin."
Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 38 (19. Sept. 1931), Berlin, pp. 1189-1192, ills., diagrs

SUBMARINE carrier. *See* Carriers: A submarine aircraft carrier.

SUDECK, G. *See* Eisner, Franz, G. Sudeck, Rudi Schröer and O. Zinke: Vergrößerung der effektiven Höhe von Flugzeugschleppantennen.

SUFFRIN-HÉBERT, and J. JARRY. La construction des avions.
Paris, 1931, pp. 500, ills.

SULLIVAN, JAMES E. Corrosion of duralumin rivets.
Aviation, Vol. 30, No. 6 (June 1931), New York, pp. 347-349, ills.

SUPERCHARGERS. *See* Léglise, Pierre: Superchargers.

— *See* Oestrich, Hermann: Untersuchung eines Flugmotoren-Geblases, Bauart Argus-Roots.

— *See* Schey, Oscar William: The comparative performance of superchargers.

— *See* Schey, Oscar William: Superchargers and supercharging.

— *See* Nebesar, Robert J.: Supercharging the aeroplane engine and increasing speed with altitude.

SUPERMARINE. Advance results of wind tunnel tests on Supermarine wing radiator.
 Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 245-248, tabl. R.A.E.
 Ref. 70 BA 5 R. 55.

- Air Ministry. Directorate of technical development. Specification No. 626.
 Supermarine S. 5.
 Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 293-311, tabls.
- How the supermarine S. 6B was built.
 Aeroplane, Vol. 41, No. 25 (Dec. 16, 1931), London, pp. 1376-1379, ills.
- Speed course test of Supermarine S. 5.
 Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, p. 352. M.A.E.E. Report
 No. F A 51A.
- Supermarine S. 5 fuselage proof load tests.
 Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 333-335. R.A.E.
 Report No. M.T. 5292.
- The Supermarine S. 6. B. racing seaplane (British). A low-wing twin-float
 monoplane.
 National Advisory Committee for Aeronautics, Aircraft Circulars No. 154, Dec. 30, 1931,
 Washington, December 1931, pp. 6, ills.
- Test of model of Supermarine S. 4 seaplane.
 Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, pp. 200-203, ills., diagrs., tabls.
 R.A.E. Report No. B. A. 550.

See Cowley, W. L., and R. Warden: Tests of quarter scale models of high
 speed seaplanes for the Schneider Trophy Contest of 1927. Introduction
 and Section I. Tests on the Supermarine S. 5. models.

- *See* Harris, R. G., and L. E. Caygill: Model tests on Supermarine S. 4
 seaplane. Effect of lowering wing.
- *See* Harris, R. G., L. E. Caygill, and R. A. Fairthorne: Wind tunnel tests
 on Gloster and Supermarine wing radiators.

SUPF, PETER, und HEINZ ORLOVIUS. Die Welt der Flieger.
 Berlin, Verlag von Reimar Hobbing, 1931, pp. 96, ills.

SURVEYING. Canal surveying from the air.
 Flight, No. 1199, Vol. 23, No. 51 (Dec. 18, 1931), London, pp. 1250-1251, ill.

- *See* Beadle, J. B.: Air survey for Hoover Dam.
- *See* Church, Earl Frank: Methods of eliminating ground surveying for
 control in aerial photographic mapping.
- *See* Hotine, Martin: Surveying from air photographs.

SUTTER, KARL. Untersuchungen über den Luftwiderstand.
 Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 12 (21. März 1931), Berlin, p. 359.

SUTTON, H., and L. F. Le BROcq. The protection of magnesium alloys against
 corrosion.
 Aer. Res. Comm., Rep. Mem., No. 1390 (M 73-A 65, 74, 92), July 1930, London, 1931, pp. 22,
 tabls.

SUTTON, O. G. *See* Davies, E. LL., and O. G. Sutton: Some problems of modern
 meteorology, No. 5. The present position of the theory of turbulent motion
 in the atmosphere.

SWAHLN, WALDEMAR. Vara Kungliga och flyget.
 Flygning, Årg. 9, N:o 5 (April-Maj 1931), Stockholm, pp. 76-78, 95, ills.

274 NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

SWAN, ANDREW. Investigation into the increase in permissible engine speed consequent upon a reduction in the weight of the reciprocating and rotating masses.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 280-283, 286-288, diagrs. R.A.E. Report No. E. 3035, 3035B.

— Piston and connecting rod weights and other relative data in modern aircraft engines.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, ppl 284-285, tabl. R.A.E. Report No. E. 3095A.

— The progress of aero engine design at the Paris show.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1153, Vol 23, No. 5 (Jan. 30, 1931), London, pp. 96d-96g (4-7), ills.

— Recent developments in engine cooling.

Journ. Roy. Aer. Soc., Vol. 35, No. 243 (March 1931), London, pp. 179-206, ills., diagrs.

— Recent progress in compression ignition engines.

Aeroplane, Vol. 41, No. 5 (July 29, 1931), London, pp. 316-320, ills.

— The value of reduced weight of reciprocating and rotating masses on engine performance with special reference to the permissible cost of lighter materials.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 289-292, tabl. R.A.E. Report No. E3035C.

SWEDEN. Aeroplanavdelning vid Svenska järnvägsverkstäderna i Linköping.

Flygning, Årg. 9, N:R 4 o. 5 (April-Maj 1931), Stockholm, p. 101.

— "Bulldogs" for Sweden.

Flight, No. 1176, Vol. 23, No. 28 (July 10, 1931), London, p. 661, ills.

— Flygvapnet och flygkommissionen.

Flygning, Årg. 9, N:R 11 (Nov. 1931), Stockholm, pp. 211, 217.

— De nordiska flygtävlingarna.

Flygning, Årg. 9, N:R 6 (Juni 1931), Stockholm, pp. 118-119, ills.

— Saving lives in Sweden.

Airway Age, Vol. 13, No. 1 (Jul. 4, 1931), New York, p. 46, ill.

— Svenska aero aktiebolaget

Flygning, Årg. 9, N:R 4 o. 5 (April-Maj 1931), Stockholm, p. 100.

— Den Svenska flygmotortillverkningen.

Flygning, Årg. 9, N:R 4 o. 5 (April-Maj 1931), Stockholm pp. 97-99, 103, ills.

SWICKARD, ANDREW E. Metal-truss wing spars.

National Advisory Committee for Aeronautics, Technical Notes No. 383, July 24, 1931, Washington, July 1931, pp. 31, diagrs., tabls.

SWITZERLAND. Flughafengebühren. Reglement des Eidgenössischen Luftamtes vom 3. Dezember 1930 über die Flugplatztaxen, gutig ab 1. Januar 1931 für die schweiz. Zollflugplätze.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 2-3 (17. Jan. 1931), Berlin, pp. 12-13.

— Schweiz. Motorloser Flug. Reglement betreffend die Organisation der Aufsicht über das motorlose Flugwesen vom 14. Dezember 1930.

Nachrichten für Luftfahrer, 12. Jahrg., Nr. 20 (16. Mai 1931), Berlin, pp. 137-140.

SWOFFER, FRANK ARTHUR. Air navigation for the private owner; a course of elementary aerial navigation.

London, New York, Sir I. Pitman & Sons, Ltd., 1931, pp. viii, 131, ills., diagrs., maps.

SYKES, CLAUD W. *See* Heydemarck, Georg; Double-decker C. 666.

SYLVESTER, HAROLD MAC TAVISH. An investigation of pressures and vacua produced on structures by wind.

Troy, N.Y., 1931, pp. 53, ills., diagrs. Rensselaer Polytechnic Institute. Engineering and Science Series, No. 31.

SYÔYAMA, MITUO. A method of laboratory device to record the period of a pendulum motion.

Science Reports of the Tokyo Bunrika Daigaku, Sec. A., Vol. i, Nos. 7-12 (May 23, 1931) Tokyo, pp. 113-147, ill.

SYRACUSE. *See* Wagner, Sterling Robacker: The modern airport. A study in landscape engineering of the location, design, construction, and management of airports, together with a suggested design for the municipal airport at Syracuse, N.Y.

SZYMANSKI, PIOTR. Écoulement plan du fluide à travers une palissade de segments rectilignes.

Prace Instytutu Aerodynamicznego w Warszawie, Zeszyt II, Warszawa, 1928, pp. 25-52, ills.

— *See* Bonder, Julian, i Piotr Szymański: Contribution à la théorie du biplan.

— *See* Bonder, Julian, i Piotr Szymanski: Sur le multiplan en tandem.

T

TABLES. *See* Dreisonstok, Joseph Young: Navigation tables for mariners and aviators.

— *See* Gingrich, John Edward: Aerial and marine navigation tables.

TAILLESS. A new tailless aeroplane. A step towards the development of a large passenger-carrying "All-wing" aircraft.

Aircraft Engineering, Vol. 3, No. 33 (Nov. 1931), London, p. 274, ills.

— *See* Heinze, Edwin P. A.: The new German "Tailless."

— *See* Westland-Hill: The Westland-Hill pterodactyl Mark IV, aeroplane.

TAIL SURFACES. *See* Rhode, Richard V.: The pressure distribution over the wings and tail surfaces of a PW-9 pusuit airplane in flight.

TAIL WHEEL. *See* Ford: De drie-motorige Ford 5-AT-C.

TAKE-OFF. *See* Gutkowski, Tadeusz: Pomiar wysokości samolotów przy startie.

— *See* Gutkowski, Tadeusz: Pomiar wysokości samolotów przy startie (opis aparatów).

— *See* Gutkowski, Tadeusz: W sprawie pomiarów wysokości samolotów przy startie.

— *See* Jaeschke, Rudolf: Ein Beitrag zur Lösung des Problems der Verkürzung von Start und Landung bei Flugzeugen.

— *See* Launching.

— *See* Mokrzycki, Gustaw Andrzej: Rozbieg startujących samolotów.

— *See* Pröll, A.: Start und Landung fahrgestelloser Flugzeuge.

— *See* Rolinson, D.: Take-off and landing of aircraft.

TALAFERRO, A. PENDLETON, JR. Traffic control—an approaching problem.
Airway Age, Vol. 12, No. 5 (May 2, 1931), New York, pp. 476-478, illus.

TANAHASHI, KEIZO. Physical properties of raw silk.
Journal of the Society of Mechanical Engineers Japan. Foreign edition, Vol. 33, No. 4 (Dec. 1930), Tôkyô, pp. 173-175, ill., tabl.

TANAKA, KEIKITI. Air flow through exhaust valve of conical seat.
Report of the Aeronautical Research Institute, Tôkyô Imperial University, No. 67 (Vol. 6, 1), (Jan. 1931), Tôkyô, pp. 24, illus., diagrs., tabls.

TANDEM MULTIPLANES. See Bonder, Julian, i Piotr Szymanski: Sur le multiplan en tandem.

TÅNING, A. VEDEL. Ravens flying upside-down.
Nature, Vol. 127, No. 3214 (June 6, 1931), London, p. 856.

TANNER, T. Movement of smoke in the boundary layer of an aerofoil without and with slot.
Aer. Res. Comm., Rep. Mem., No. 1352 (Ae 483-T. 2983), July 1930, London, 1931, pp. 2, illus., diagrs.

— The two-dimesional flow of air around an aerofoil of symmetrical section.
Aer. Res. Comm., Rep. Mem., No. 1353, (Ae. 484-T. 2984), July 1930, London, 1931, pp. 11, diagrs., tabls.

TAPSELL, H. J., S. L. ARCHBUTT, and J. W. JENKIN. Alloys sub-committee. Aeronautical Research Committee. Mechanical properties of pure magnesium and certain magnesium alloys in the wrought condition (continued). Mechanical properties of an "Electron" alloy.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 1024-1032, illus., diagr., tabls. Rep. Mem. No. 1285. (M. 66.)

TATE, GEORGE, JR. Servicing aircraft instruments.
Aviation, Vol. 30, No. 40 (April 1931), New York, pp. 239-243, illus.

TAUB, JOSEF. Beitrag zur Frage der Belastungsannahmen für den Landungsstoss von Seeflugzeugen.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 14. Heft (28. Juli 1931), München und Berlin, pp. 433-442, diagrs.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E.V., München und Berlin, 1931, 101-110, ill., diagrs.

— Load assumption for the landing impact of seaplanes.
National Advisory Committee for Aeronautics, Technical Memorandums No. 643, Oct. 22, 1931, Washington, October 1931, pp. 29, diagrs.

TAUBER, ERNST. Haftung des Luftfahrzeughalters und Reichsversicherungsordnung.
Luftschau, 4. Jahgr., Nr. 19 (10. Okt. 1931), Berlin, p. 83.

TAVERNE, GASPARD LOUIS. Aviation naturelle; études sur la mécanique animale en vue d'applications aux machines locomotrices et spécialement à l'aéroplane; préface de M. E. Bourdelle.
Paris, G. Doin & Cie., 1931, pp. x, 89, illus., diagrs.

TAXES. See Tell, William K.: Taxation of aircraft motor fuel.

TAYLOR, C. FAYETTE. Power plant progress.
Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 26-28, illus.

— A suggested method for measuring turbulence.
National Advisory Committee for Aeronautics, Technical Notes No. 380, June 22, 1931, Washington, June 1931, pp. 7, diagrs.

TAYLOR, E. S. Bearing loads on radial-engine crankshafts.
Journ. Soc. Automotive Eng., Vol. 28, No. 4 (April 1931), New York, pp. 481-485, ills.

TAYLOR, G. I. The flow of air at high speeds past curved surfaces.
Aer. Res. Comm., Rep. Mem., No. 1381 (Ae. 506-T, 2904), Jan. 1930, London, 1930, pp. 14, ills., diagrs., tabls.

— Some cases of flow of compressible fluids.
Aer. Res. Comm., Rep. Mem., No. 1382 (Ae. 507-T. 2918), February 1930, London, 1931, pp. 16, ills., diagrs., tabls.

TAYLOR, H. W. Mapping Porto Rico from the sky.
Nat. Aer. Mag., Vol. 9, No. 11 (Nov. 1931), Washington, pp. 12, 21, ills.

TAYLOR, PHILIP B. The thrust of radial engines. An examination of present practice with suggestions for increasing effective thrust horsepower.
Aircraft Engineering, Vol. 3, No. 27 (May 1931), London, pp. 109-113, ills., diagrs.

TECHNIQUE. *See* L. P.: Caractéristiques techniques générales.

TEED, P. L. Gas fuels for airships. The manufacture of Blau Gas, with details of some possible alternatives.
Aircraft Engineering, Vol. 3, No. 24 (Feb. 1931), London, pp. 41-42, ill., tabl.

TEED, T. L. Airships in horizontal flight. An examination of the complicated forces that come into play when an airship is pitched.
Aircraft Engineering, Vol. 3, No. 27 (May 1931), London, pp. 107-108, diagrs.

TEICHMANN, ALFRED. Das raumliche Knicken einiger Stabverbindungen des Flugzeugbaues.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 17. Heft (14. Sept. 1931), München und Berlin, pp. 525-526, diagrs., tabl.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 230-232, diagrs.

— Spatial buckling of various types of airplane strut systems.
National Advisory Committee for Aeronautics, Technical Memorandums No. 647, Nov. 19, 1931, Washington, November 1931, pp. 8, tabls.

— Zur berechnung auf knickbiegung beanspruchter flugzeug holme.
München, R. Oldenbourg, 1931, pp. 50, diagrs.

TEICHMANN, ALFRED, und KARL BORKMANN. Versuche mit langen Bolzen in Holzbauteilen.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 18. Heft (28. Sept. 1931), München und Berlin, pp. 557-558, ill., diagr.
Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 221-229, ills., diagrs.

TELEIDOGRAPHIC. *See* Guerra, U.: Note sulla trasmissione delle immagini dagli aerei alla terra e viceversa.

TELL, WILLIAM K. Taxation of aircraft motor fuel.
Journal of Air Law, Vol. 2, No. 3 (July 1931), Chicago, pp. 342-355.

TELLOIORT, ALBERT. Les problèmes de l'aviation mis à la portée de tout le monde.
Perpignan, Imprimerie Sinthe & Cie., 1931, pp. 28.

TEMPERATURE. *See* Wollé, Georg: Die Kalteanlage der DVL.

TENANI, M. Un nuovo tipo di sestante per aeronautica.
L'Aerotecnica, Vol. 11, n. 6-7 (giug.-lugl. 1931), Roma, pp. 760-766, ills. English abstract p. 895.

TENDER. An all-metal tender for seaplanes.
Flight, No. 1165, Vol. 23, No. 17 (April 24, 1931), London, p. 362, ills.

TENSIONMETER. *See* Janik, Franciszek: Opis przyrządów rycowych.

— *See* Wolski, Kazimierz: Stosowanie tensometrów do prób statycznych płatowców.

TER-NEDDEN, WILHELM. Das internationale luftverkehrsrecht . . .

Anakenbrück i. Hann, 1931, pp. x, 70.

TERRY, A. *See* Muir, N. S., and A. Terry: A harmonic analysis of the torque curves of a single cylinder electric ignition engine when throttled to various mean indicated pressures, with an appendix on the estimation of forcing torques in multicylinder engines.

TERZI, FRANCESCO LANA. *See* Badia Polesine, Jotti da: L'opera aeronautica del padre conte Francesco Lana Terzi, Breaciano.

TESTING. *See* Gerard, I. J.: The primary importance of mechanical testing in aircraft construction.

— *See* Hanson, Earl: Testing engines for A.T.C.

— *See* Hertel Heinrich: Dynamische Bruchversuche mit Fliegzeugbauteilen.

— *See* Hüber, Walter: Anweisung für die Prüfung der Eigenschaften von Flugzeugen.

— *See* Skerry, E.: Notes on the proof stress. A practical article on the meaning and use of the new method of testing materials.

— *See* Tett, H. C.: Fuels and modern methods of testing.

TETT, H. C. Fuels and modern methods of testing.

Journ. Roy. Aer. Soc., Vol. 35, No. 247 (July 1931), London, pp. 633-641, ills.

TEWES, KARL. *See* Horn, Hans A., und Karl Tewes: Die Schweißung von Elektronmetall im Flugzeugbau.

THADEN, LOUISE MCPHETRIDGE. Training women pilots.

Western Flying, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Cal., pp. 22-23, 91, ills.

THALAU, KARL. Aufgaben der Luftfahrzeug-Statik.

Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 8. Heft (28. April 1931), München und Berlin, pp. 229-241, ills., tabls., diagrs.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 67-79, ills., diagrs.

— Zur Frage der Belastungsannahmen für Flugzeuge.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, E. V., München und Berlin, 1931, pp. 80-82, tabl.

THEODOLITE. *See* Heyde, Gustav: Recording balloon theodolite.

THEODORSEN, THEODORE, and WILLIAM C. CLAY. Ice prevention on aircraft by means of engine exhaust heat and a technical study of heat transmission from a Clark Y airfoil.

National Advisory Committee for Aeronautics, Report No. 403, Feb. 13, 1932, Washington, U.S. Government Printing Office, 1931, pp. 24, ills., diagrs.

THEODORSEN, THEODORE. Investigation of the diaphragm-type pressure cell.

National Advisory Committee for Aeronautics, Report No. 388, July 9, 1931, Washington, U.S. Government Printing Office, 1931, pp. 18, ills., diagrs., tabls.

— A new principle of sound frequency analysis.

National Advisory Committee for Aeronautics, Report No. 395, Oct. 7, 1931, Washington, U.S. Government Printing Office, 1931, pp. 15, ills., diagrs.

THEODORSEN, THEODORE. On the theory of wing sections with particular reference to the lift distribution.

National Advisory Committee for Aeronautics, Report No. 383, Aug. 22, 1931, Washington, U.S. Government Printing Office, 1931, pp. 16, ills., diagrs., tabls.

THEODORSEN, THEODORE, and WILLIAM C. CLAY. The prevention of ice formation on gasoline tank vents.

National Advisory Committee for Aeronautics, Technical Notes No. 394, Oct. 6, 1932, Washington, October 1931, pp. 7, ills. diagrs., tabls.

THEODORSEN, THEODORE. The theoretical pressure distribution on wing sections. Physical Review Vol. 37, No. 12 (June 15, 1931), Minneapolis, p. 1701. (Abstract).

THEUERMEISTER, ROBERT. Vom Luftballon zum Zeppelin. Ein Stück Menschenarbeit den Kindern erzählt.

Leipzig, Verlag Ernst Wunderlich, 1931, pp. 204 ills.

THOELZ, W., und W. HAEDER. Flugmotoren in Leicht- und Schwerölbauart.

Berlin, Verlag Richard Carl Schmidt & Co., 1931, pp. 350, ills.

THOM, A. Eddies behind a circular cylinder.

Aer. Res. Comm., Rep. Mem., No. 1373 (Ae. 500-T. 3037), December 1930, London, 1931, pp. 8, ills., diagrs., tabl.

— Experiments on the flow past a rotating cylinder.

Aer. Res. Comm., Rep. Mem., No. 1410 (Ae. 531-T. 3095), March 1931, London, 1931, pp. 13, ills., diagrs., tabls.

— The pressure on the front generator of a cylinder.

Aer. Res. Comm., Rep. Mem., No. 1389 (Ae. 511-T. 3048), December 1930, London, 1931, pp. 14, ills., diagrs., tabls.

THOMPSON, A. See Stanhope, T., and A. Thompson: Who's who in British aviation, 1931.

THOMPSON, FLOYD LA VERNE, and H. W. KIRSCHBAUM. The drag characteristics of several airships determined by deceleration tests.

National Advisory Committee for Aeronautics, Report No. 397, Oct. 12, 1931, Washington, U.S. Government Printing Office, 1931, pp. 15, diagrs., tabls.

THOMPSON, FLOYD LA VERNE, and P. H. KEISTER. Lift and drag characteristics of a cabin monoplane determined in flight.

National Advisory Committee for Aeronautics, Technical Notes No. 362, Jan. 27, 1931, Washington, January 1931, pp. 11, ills., diagrs., tabls.

THOMPSON, JAMES G. Engine service and maintenance. Part IV—The Kinner K-5.

Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Cal., pp. 44-46, ills.

— Engine service and maintenance. Part V—Wright Whirlwinds J-6.

Western Flying, Vol. 9, No. 2 (Feb. 1931), Los Angeles, Cal., pp. 46-48, 91, ills.

— Engine service and maintenance. Part VI—Pratt & Whitney radial engines.

Western Flying, Vol. 9, No. 3 (March 1931), Los Angeles, Cal., pp. 40-41, 95, ills.

— Engine service and maintenance. Part VII—Warner Scarab and Scarab junior.

Western Flying, Vol. 9, No. 4 (April 1931), Los Angeles, Cal., pp. 44-46, ills.

— Engine service and maintenance. Part VIII—Cirrus engines.

Western Flying, Vol. 9, No. 5 (May 1931), Los Angeles, Cal., pp. 46-49, 91, ills.

— Engine service and maintenance. Part IX—Wright and DH Gipsy.

Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Cal., pp. 50-52, ills.

THOMPSON, JAMES G. Engine service and maintenance. Part X—Le Blond engines.

Western Flying, Vol. 10, No. 1 (July 1931), Los Angeles, Cal., pp. 40-42, 75, ill.

— Engine service and maintenance. Part XI-A—Trouble shooting.

Western Flying, Vol. 10, No. 3 (Sept. 1931), Los Angeles, Cal., pp. 28-29, 62.

— Engine service and maintenance. Part XI-B—Trouble shooting.

Western Flying, Vol. 10, No. 4 (Oct. 1931), Los Angeles, Cal., pp. 32-34, ill.

— Engine service and maintenance. Part XI-C—Trouble shooting.

Western Flying, Vol. 10, No. 5 (Nov. 1931), Los Angeles, Cal., pp. 34-36, ill.

— Engine service and maintenance. Part XI-D—Trouble shooting.

Western Flying, Vol. 10, No. 6 (Dec. 1931), Los Angeles, Cal., pp. 36-38, ill.

— Servicing light planes.

National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, p. 23, ill.

THOMPSON, THEODORE E. *See* Bedell, Frederick: The airplane, a practical discussion of the principles of airplane flight. Rewritten and enlarged with the assistance of Theodore E. Thompson.

THOMPSON TROPHY. *See* Granville, Z. D.: Gee Bee super-sportster. Winner of the Thompson trophy at 236.24 M.P.H.

THORNHILL, GERTRUDE. Italy to Brazil 6450-mile formation flight.

Aero Digest, Vol. 18, No. 2 (Feb. 1931), New York, pp. 44-45, ill.

THORPE, LESLIE AARON. Simplified definitions and nomenclature for aeronautics.

San Francisco, Calif., Aviation Press, 1931, pp. 128.

THRUST. *See* National Physical Laboratory: The National Physical Laboratory. Racing seaplanes and new aircraft. Airscrews. Thrust integrating tubes.

TICHENOR, FRANK A. Air—hot and otherwise.

Aero Digest, Vol. 19, No. 1, 4 (July, Oct. 1931), New York, pp. 38, 130, 35.

National Air Races, Cleveland.

— Air—hot and otherwise. Flying ahead. Rendering useful service. Period of adjustment.

Aero Digest, Vol. 19, No. 5 (Nov. 1931), New York, pp. 34, 96.

— Air—hot and otherwise. The N.A.C.A. counters.

Aero Digest, Vol. 18, No. 2 (Feb. 1931), New York, pp. 50, 122-130.

— Air—hot and otherwise. Organize in Washington.

Aero Digest, Vol. 19, No. 2 (Aug. 1931), New York, pp. 38, 104.

— Air—hot and otherwise. What was wrong with problem XII?

Aero Digest, Vol. 18, No. 4 (April 1931), New York, pp. 44, 238.

TICKETS. *See* Gore, Warren J.: Use of air travel tickets.

TIETJENS, O. Beobachtung von Strömungsformen.

Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 1. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. 669-703, ill., diagrs.

— Hydro- und Aeromechanik nach vorlesungen von I. Prandtl. Band 2: Bewegung reibender Flüssigkeiten und technische Anwendungen.

Berlin, Julius Springer, 1931, pp. viii, 299+28, ill.

TIJEN, VAN Amsterdam-Bandoeng met de "Adelaar".
Het Vliegveld, 15 de Jaarg., No. 2 (Feb. 1931), Amsterdam, pp. 38-42, ills.

TIJEN, J. E. VAN Amateurvlieger en navigator op de route naar Indië.
Het Vliegveld, 15 de Jaarg., No. 9 (Sept. 1931), Amsterdam, pp. 329-331, ills.

TILGENKAMP, E. See Dornier, Claudius, und E. Tilgenkamp: Do.X—das grösste Flugschiff der Welt.

TIMING. See Hardy, J. K., and K. V. Wright: The automatic timing of aircraft over a speed course.

TINAGLIA, GUGLIELMO. Aerodinamica.
Bergamo, anonima Bolis, [1931], pp. 56.

— Costruzione degli aerei.
Bergamo, anonima Bolis, [1931], pp. 37.

— Istruzioni di volo. Norme per la circolazione aerea.
Bergamo, anonima Bolis, [1931], pp. 25.

— Navigazione aerea ad uso dei piloti e degli ufficiali di rotta de 2^a classe.
Bergamo, anonima Bolis, [1931], pp. 77.

TINSON, CLIFFORD W. Correction of aeroplane performance to standard atmosphere (Density basis).

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1178, 1183, Vol. 23, No. 30, 35 (July 24, Aug. 28, 1931), London, pp. 726c-726g, (51-55), 862a-862b, (57-58), diagrs.

TIRES. See Wolski, Kazimierz: Wytrzymałość opon.

TISSANDIER, PAUL. Il est nécessaire de faciliter les voyages internationaux.
L'Aérophile, 39^e année, No. 4 (15 avril 1931), Paris, p. 97.

TITANIUM TETRACHLORIDE. See Rosenhain, W., J. D. Grogan, and T. H. Schofield: The influence of Titanium Tetrachloride on cast aluminium alloys.

TITAYNA, PSEUD. Mademoiselle against the world.
New York, H. Liveright, 1931, pp. viii, 320, ills.
Translated by Mrs. Madeleine Elise (Reynier) Boyd.

TIZARD, H. T. Compression-ignition engines. A return to fundamentals in a comparison with the petrol engine.
Aircraft Engineering, Vol. 3, No. 30 (Aug. 1931), London, pp. 185-186, 196, ills.

— See Maitland, C. E., and A. E. Woodward Nutt: Flight tests on the variation of the range of an aircraft with speed and height.

TÖPFER, CARL. Auftriebsverteilung und Längsstabilität.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 12. 22. Heft (29. Juni, 28. Nov. 1931), München und Berlin, pp. 366-368, 662-663, diagrs.

— Lift distribution and longitudinal stability.
National Advisory Committee for Aeronautics, Technical Memorandums No. 641, Oct. 8, 1931, Washington, October 1931, pp. 7, diagrs.

TOKIO. See Berlin-Tokio: Berlin-Tokio in 10 Tagen. Aus dem Reisebericht des japanischen Fliegers Yoshihara.

TOKYO IMPERIAL UNIVERSITY. See Japan: The Japanese research institute. The recently opened aeronautical laboratory of Tokyo Imperial University.

TOLLMIEN, W. Grenzschichttheorie.
Wein, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 1. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. 239-287, ill., diagr.

TOLLMIEN, W. The production of turbulence.

National Advisory Committee for Aeronautics, Technical Memorandums No. 609, March 5, 1931, Washington, March 1931, pp. 32, diagrs.

— Turbulente Stromungen.

Wien, W., und F. Harms: Handbuch der Experimentalphysik, Bd. 4, 1. Teil. Hydro- und aerodynamik, Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. 289-339, ills., diagrs.

TORQUE. *See* Knight, Montgomery, and Carl J. Wenzinger: Rolling moments due to rolling and yaw for four wing models in rotation.

— *See* Lock, C. N. H., and H. Bateman: Airscrews at negative torque.

TORRES, M. DE. Ensayos del helicóptero Pescara en Barcelona.

Iberica, Año 18, Núm. 862 (24 enero 1931), Barcelona, pp. 49-54, ills.

TORSIOGRAPH. *See* Stieglitz, Albert: Der DVL-Torsiograph, ein drehschwingungs-Messgerät für Fahrzeugmotoren.

TORSION. *See* Atkin, E. H.: Torsion in thin cylinders.

— *See* Orr, James: Several cases of non-circular torsion solved by analysis and direct test.

TOULMAN-SMITH, A. K. The range of air line beacons. A determination of the limit of visibility for use in the design of aircraft lights.

Aircraft Engineering, Vol. 3, No. 23 (Jan. 1931), London, 12.

TOURING. L'activité du Roland-Garros.

L'Aérophile, 39e année, No. 7 (15 uil. 1931), Paris, pp. 207-208, ill.

— *See* Sibour, Vicomte de: Un voyage.

TOURISME AÉRIEN. Tourisme aérien. Troi grandes randonnées: Berlin-Tokio—Le tour de l'Afrique—Paris-Dakar et retour.

Bull. Féd. Aér. Int., 12e année, No. 45 (avril 1931), Paris, pp. 35-39, ills.

TOUSIGNAN, S. M., and W. E. KONECZNY. Grapho-analytical method of least work.

Airway Age, Vol. 12, No. 10 (Jun. 6, 1931), New York, pp. 572-575, ills., tabls.

TOUSSAINT, A. La aviación actual. Versión española de Mariano Moreno Caracciolo.

Barcelona, Montauer y Simón, S. A., 1931, pp. 342, ill.

TOWING. *See* Glauert, H.: The stability of a body towed by a light wire.

TOWLE. Towle all-metal amphibion flying boat.

Aero Digest, Vol. 18, No. 2 (Feb. 1931), New York, pp. 58-59, ills.

TOWNEND, H. C. H. On rendering airflow visible by means of hot wires.

Aer. Res. Comm., Rep. Mem., No. 1349, (Ae. 481—Ae. Techl. 519), October 1930, London, 1931, pp. 5, ills.

— Reduction of drag of radial engines by the attachment of rings of aerofoil section, including interference experiments of an allied nature, with some further applications.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 540-614, ills., diagrs., tabls. Rep. Mem. No. 1267. (Ae. 413.)

— A study of slots, rings & boundary layer control by blowing.

Journ. Roy. Aer. Soc., Vol. 35, No. 248 (Aug. 1931), London, pp. 711-743, diagrs.

— A study of slots, rings and jet control of the boundary layer.

Aer. Res. Comm., Rep. Mem., No. 1394 (Ae. 515-T. 3078), February 1931, London, 1931, pp. 31, ills., diagrs., tabls.

TRACK assembly. Track assembly of aircraft. Blackburn's latest time-saving system.

Flight, No. 1152, Vol. 23, No. 4 (Jan. 23, 1931), London, pp. 73-74, ills.

— *See* Westlands: Track assembly at Westlands.

TRAFFIC. *See* Rose, Don: The traffic or tomorrow.

TRAFFIC control. *See* Taliaferro, A. Pendleton, Jr.: Traffic control—an approaching problem.

TRAFFIC rules. *See* United States Department of Commerce. Aeronautics Branch: Air traffic rules. Extract from air commerce regulations, December 1, 1929.

TRAINING. Air service training.

Aeroplane, Vol. 40, No. 15 (April 15, 1931), London, pp. 646, 648.

Flight, No. 1175, Vol. 23, No. 27 (July 3, 1931), London, pp. 636-637, ills.

— *See* Air Service Training limited: Preliminary prospectus of air service training limited.

— *See* Asjes, D. L.: Se vliegschool.

— *See* Bonnalie, Alan F.: The mechanic specializes.

— *See* Orr, George W.: Flying instruction as it should be.

— *See* Parrott, R. J.: Air Force training. Some constructional considerations of the ideal military training aeroplane.

— *See* Scott, F. P.: Air Force training. Training in peace and war.

— *See* Stimson, Thomas, E., jr.: Aviation in the high schools.

TRANSPORT. Air transport.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, vol. 1, London, 1931, p. 61.

— The largest air transport system in the world in point of mileage flown. U.S. Air Services, Vol. 16, No. 9 (Sept. 1931), Washington, pp. 18, 20.

— *See* Breithaupt, J.: Vorteile des Luftschiffs als Verkehrsmittel auf Groesst-entfernungen.

— *See* Dupuis, Guy D.: Le rail et l'aile (étude économique sur les transports ferroviaires et aériens.)

— *See* Durán, Heriberto: Los trasportes aéreos en los Estados Unidos de Norteamérica.

— *See* Lawrance, Charles L.: Air transport. What it means to the manufacturer.

— *See* Niles, Alfred S.: West coast progress in 1930.

— *See* Pirozzi, Alfonso: L'utilizzazione economica delle linee aeree e la coope-razione del velivolo cogli altri mezzi de trasporto.

— *See* Schildhauer, C. H.: The DOX—Profitable transportation.

TRAVEL AIR. The Travel Air model "R".

Flight, No. 1165, Vol. 23, No. 17 (April 24, 1931), London, pp. 358-361, ills.

TRAVEL AIR "R." *See* Mystery ship: The "Mystery ship" revealed. The fast-est commercial plane yet flown, it has out-performed the best planes of the Army and Navy.

TRAYER, GEORGE W., and H. W. MARCH. Elastic instability of members having sections common in aircraft construction.

National Advisory Committee for Aeronautics, Report No. 382, Aug. 12, 1931, Washington, U.S. Government Printing Office, 1931, pp. 42, ills., diagrs., tabs.

TREATIES. *See* Allied and associated powers: Protocol amending articles 34 and 40 of the Convention for the Regulation of Aerial Navigation of October 13, 1919. Paris, December 11, 1929. Irish ratification on April 9, 1930.

— *See* Austria: Oesterreich. Vertrag zwischen der Republik Oesterreich und dem Königreich der Niederlande über den Luftverkehr.

— *See* Canada: Exchange of notes (August 29, and October 22, 1929) recording an agreement between Canada and the United States of America regarding the admission of civil aircraft, the issuance of pilots' licenses and the acceptance of certificates of airworthiness for aircraft imported as merchandise.

— *See* Great Britain: Agreement between His Majesty in respect of the United Kingdom and the President of the German Reich amending the agreement of June 29, 1927 relating to air navigation. Berlin, July 5, 1930. Ratifications exchanged at Berlin, May 6, 1931.

— *See* Great Britain: Exchange of notes between His Majesty's governments in the United Kingdom, Canada, the Commonwealth of Australia, New Zealand, and the Union of South Africa and the Government of India, and the Italian government respecting documents of identity for aircraft personnel. London, April 13, 1931.

— *See* Hahn, Kurt: Die deutschen luftverkehrsabkommen.

— *See* United States: Air navigation. Arrangement between the United States of America and Italy. Effective by exchange of notes signed October 13 and 14, 1931. Effective October 31, 1931.

TREMBLOT, R. Hydrodynamique experimentale. Sur l'application des interférences à quelques problèmes d'écoulement à grande vitesse.

C. R. Acad. Sci., T. 193, No. 10 (7 sept. 1931), Paris, pp. 418-419.

TREUSCH VON BUTTLAR BRANDENFELS, A. W. FRH. v. Zeppeline gegen England.

Zurich [etc] Amalthea verlag, 1031.

TREUSCH VON BUTTLAR, BRANDENFELS, HORST. Zeppelins over England. Translated from the German by Huntley Paterson.

London, G. G. Harrap & Co., Ltd., 1931, pp. 231, ills.

TRIGONA DELLA FLORESTA, ERCOLE. Considerazioni sul comando degli aeroplani ad ala deformabile in relazione al centramento.

L'Aerotecnica, Vol. 11, n. 10 (ott. 1931), Roma, pp. 1249-1267, diagrs. Abstract in English, p. 1339.

— Problemi strutturali nella costruzione degli aeroplani giganti.

L'Aerotecnica, Vol. 11, n. 8 (agosto 1931), Roma, pp. 971-991, ills. Abstract in English p. 1065.

TRISSÉ-SOLIER. *See* Cupin; P., et Trissé-Solier: Hydrodynamique. Sur les tourbillons alternés de Benard-Karman et la loi de similitude dynamique de Reynolds.

TROJANI, F. Aviazione; lezioni tenute agli allievi piloti di aeroplano 1931.

Roma, Stab. tipo-lit. di A. Sampaolesi, 1931, pp. 163, 26, ills., diagrs.

TRUMBULL, JOHN H. Meeting the challenge for sound cargo and passenger air transport service.

National Aeronautic Magazine, Vol. 9, No. 1 (Jan. 1931), Washington, pp. 31-36, ills.

TRUSSING. *See* Cassens, J.: Systematischer Gewichtsvergleich an räumlichen Fachwerken.

TUBES. *See* Handasyde, G. H.: Welded tube construction.

— *See* Reynolds, Austyn: Seamless steel tubes for aircraft. A description of the manufacturing processes employed with a discussion on materials and their qualities.

TULSA. Airport operators go into conference at Tulsa.

Airway Age, Vol. 12, No. 5 (May 2, 1931), New York, pp. 471-472, 496.

TUNGSTEN. *See* Wright, S. J.: The elasticity of pintsch crystals of tungsten.

TUNNELS. *See* Photometric tunnels.

— *See* Wind tunnels.

TURBINES. An internal combustion turbine.

Aeronautical Engineering, suppl., to the Aeroplane, Vol. 40, No. 21 (May 27, 1931), London, pp. 980, 982, 984, ills.

— *See* Prosciutto, A.: Sulla determinazione degli angoli caratteristici dei palettamenti delle macchine a turbine.

— *See* Spannhake, W.: Kreiselpumpen und Turbinen.

— *See* Stipa, L.: L'ala a turbina.

TURBULENCE. *See* Karmán, Th. v.: Mechanical similitude and turbulence.

— *See* Prandtl, L.: Effect of stabilizing forces of turbulence.

— *See* Stack, John: Tests in the variable density wind tunnel to investigate the effects of scale and turbulence on airfoil characteristics.

— *See* Taylor, C. Fayette: A suggested method for measuring turbulence.

— *See* Tollmien, W.: The production of turbulence.

TURBULENT motion. *See* Davies, E. LL., and O. G. Sutton: Some problems of modern meteorology, No. 5. The present position of the theory of turbulent motion in the atmosphere.

TURKEY. Ueberflug.

Nachrichten fur Luftfahrer, 12. Jahrg., Nr. 2-3 (17. Jan. 1931), Berlin, pp. 14-15, map.

TURN indicator. A new turn indicator.

Aeroplane, Vol. 41, No. 23 (Dec. 2, 1931), London, pp. 1291-1292, ill.

— A new turn indicator. A gyroscopic instrument with an ingenious mounting and fluid-friction drive of general application.

Aircraft Engineering, Vol. 3, No. 28 (June 1931), London, p. 146, ills.

— *See* Reid-Sigrist: The Reid-Sigrist turn indicator.

TURNBULL, W. R. Controllable-pitch propeller.

Journ. Roy. Aer. Soc., Vol. 35, No. 243 (March 1931), London, pp. 231-244, diagrs.

TURNER, CHARLES CYRIL. *See* Hewshaw, P. W.: Air questions and answers.

TURNER, ELLWOOD J. Resumé of experience of Pennsylvania in state regulation. U. S. Air Services, Vol. 16, No. 9 (Sept. 1931), Washington, pp. 29-30.

TUTTLE, ALONZO HUBERT, and DALE ELMER BENNETT. Extent of power of Congress over aviation.

Cincinnati, 1931, pp. 32. Reprinted from Cincinnati Law Review, Vol. 5, No. 3.

TWINNING. *See* Gough, H. J., and H. L. Cox: Mode of deformation of a single crystal of silver.

TYRES. *See* Dowty, George H.: Aircraft wheels and tyres. A review of current practice with comments on merits and demerits of various types.

U

UNDERHILL, E. A. Pilots under the hood.

Western Flying, Vol. 10, No. 3 (Sept. 1931), Los Angeles, Calif., pp. 18-19, 62, ills.

UNITED STATES. Air navigation. Arrangement between the United States of America and Italy. Effectuated by exchange of notes signed October 13 and 14, 1931. Effective October 31, 1931.

Washington, United States Government Printing Office, 1931, pp. 11.

Department of State, Publication No. 248, Executive Agreement Series No. 24.

— The American naval airships.

Aeroplane, Vol. 40, No. 14 (April 8, 1931), London, pp. 600, 602-603, ills.

— Amerikanische Flugzeug- und Motorenmodelle des Jahres 1930.

Zeitschr. Ver. deutscher Ing., Bd. 75, Nr. 5 (31. Jan. 1931), Berlin, p. 150.

— Arrangement effected by exchange of notes between the United States and the Dominion of Canada. Admission of civil aircraft, the issuance of pilots' licenses and the acceptance of certificates of airworthiness for aircraft imported as merchandise. Signed August 29, 1929, and October 22, 1929.

Washington, United States Government Printing Office, 1929, pp. ii, 4.

Department of State. Executive agreement series No. 2. Department of State Publication No. 19.

— *See* Abrams, Monte C.: Air express possibilities in the United States.

— *See* Accidents: Aeroplane accidents in U.S.A.

— *See* Akron: El dirigible "Akron" de la marina Norte Americana.

— *See* B., H.: La crise de l'aéronautique marchande aux États-Unis.

— *See* Colegrove, Kenneth: The international aviation policy of the United States.

— *See* Lawrence, Charles L.: Commentaires sur la situation aéronautique aux États-Unis.

— *See* Mettam, H. A.: Performance requirements for airworthiness in Great Britain and the U.S.A.

— *See* Mounier, P. J. J.: De Amerikaansche vliegbalans over 1930.

UNITED STATES ARMY. *See* Davison, F. Trubee: Glancing back at 1930. The Army air corps.

UNITED STATES BUREAU OF LIGHTHOUSE SERVICE. Radio Beacons and radio-beacon navigation. By George R. Putnam. July 1, 1931.

Washington, Government Printing Office, 1931, pp. 42, ills., diagrs., tabs.

UNITED STATES BUREAU OF STANDARDS. *See* Control: Control by conventional ailerons. Results of a series of wind-tunnel experiments carried out by the U.S. Bureau of Standards.

— *See* Radio: A new airplane radio device.

UNITED STATES CAVALRY SCHOOL, Fort Riley, Kan. Other arms, air corps. Academic division, the Cavalry School, Fort Riley, Kansas, 1931-1932. Ft. Riley, Q.M.C. Plant, 1931, pp. 90, diagrs.

UNITED STATES CONGRESS. *See* Tuttle, Alonzo Hubert, and Dale Elmer Bennett: Extent of power of Congress over aviation.

— House. Committee on Foreign Affairs. International Technical Committee of Aerial Legal Experts . . . Report to accompany H. J. Resolution 299. Washington, U.S. Government Printing Office, 1930, pp. 2. 71st Congress, 2nd Session. House. Report 1345.

— House. Committee on Military Affairs. Additional land for Langley Field, Va. Report to accompany H.R. 10370. Washington, U.S. Government Printing Office, 1931, p. 1. 71st Congress, 3rd Session. House. Report 2782.

— House. Committee on Military Affairs. Appropriation for construction at Randolph Field, San Antonio, Texas. Report to accompany H.R. 14912. Washington, U.S. Government Printing Office, 1931, pp. 2. 71st Congress, 3d Session. House. Report 2877.

— House. Committee on Military Affairs. Increase flying-field area of Governors Island, N.Y. . . . Report to accompany H.R. 137. Washington, U.S. Government Printing Office, 1931, pp. 4. 71st Congress, 3d Session. House. Report 2898.

— House. Committee on Military Affairs. Lease portions of Air Depot, Little Rock, Ark. . . . Report to accompany H.R. 15493. Washington, U.S. Government Printing Office, 1931, pp. 3. 71st Congress. 3d. Session. House. Report 2875.

— House. Committee on Military Affairs. To lease Governors Island, Massachusetts to city of Boston. Hearings before subcommittee No. 1 Committee on Military Affairs House of Representatives, seventy-first Congress. Third session on H.R. 14043. Jan. 21, 1931. Washington, Government Printing Office, 1931, pp. 18.

— House. Committee on Naval Affairs. To amend the act entitled "An act to authorize the construction and procurement of aircraft and aircraft equipment in the Navy and Marine Corps, and to adjust and define the status of the operating personnel in connection therewith", approved June 24, 1926, with reference to the number of enlisted pilots in the Navy . . . Report to accompany H.R. 16588. Washington, U.S. Government Printing Office, 1931, pp. 3. 71st Congress, 3d Session, House Report 2451.

— Joint Commission on Airports. Airports, National Capital. Report of the Joint Commission on Airports, Congress of the United States, pursuant to Public Resolution No. 106, Seventieth Congress, to establish a Joint Commission on Airports.

Washington, U.S. Government Printing Office, 1930, pp. ii, 4. 71st Congress, 2d Session, Senate Doc. 93.

— Joint Commission on Airports. Recommending acquisition of airports . . . Report.

Washington, U.S. Government Printing Office, 1930, pp. 4. 71st Congress, 2d Session, House Report 852.

UNITED STATES CONGRESS. Senate. Committee on Commerce. Merchants' aircraft . . . Feb. 6, 1931.
Washington, Government Printing Office, 1931, pp. 38.

— Senate. Committee on Naval Affairs. Authorizing the Secretary of the Navy to accept a lighter-than-air base, and to construct necessary improvements thereon . . . Report to accompany H.R. 6810.
Washington, U.S. Government Printing Office, 1931, pp. 3. 71st Congress, 3d Session. Senate. Report 1492.

— Senate. Committee on Post Offices and Post Roads. Establishment of air mail routes . . . Report to accompany H.R. 11704.
Washington, U.S. Government Printing Office, 1930, pp. 3. 71st Congress, 2d Session. Senate. Report 524.

— Senate. Committee on the District of Columbia. Commercial airport for District of Columbia . . . Report to accompany S. 3901.
Washington, U.S. Government Printing Office, 1930, pp. 3. 71st Congress, 2d Session. Senate. Report 289.

UNITED STATES DEPARTMENT OF AGRICULTURE. Weather Bureau. Tables for computing horizontal distance of pilot balloons, Aerological Division.
Washington, United States Government Printing Office, 1931, pp. 60.

UNITED STATES DEPARTMENT OF COMMERCE. Aircraft accidents. Letter from the acting secretary of Commerce transmitting, in response to Senate Resolution No. 206, information on aircraft accidents which have occurred between the date of May 20, 1926, and May 16, 1930, of which the Department has a record.

Washington, U.S. Government Printing Office, 1931, pp. iii, 259, tabls. 71st Congress, 3d Session. Senate. Doc. 319.

— Aeronautics Branch. Aeronautics trade directory. Part I. Commodities. Part II. Activities. July 1, 1931.
Washington, United States Government Printing Office, 1931, pp. 57. Aeronautics Bulletin No. 3.

— Aeronautics Branch. Air commerce regulations. Effective as amended January 1, 1931.
Washington, U.S. Government Printing Office, 1931, pp. ii, 33. Aeronautics Bulletin No. 7.

— Aeronautics Branch. Air commerce regulations. Effective December 31, 1926. Effective as amended September 1, 1929.
Washington, U.S. Government Printing Office, 1929, pp. 30, ill. Aeronautics Bulletin No. 7.

— Aeronautics Branch. Air commerce regulations governing alterations and repairs to licensed aircraft. Effective January 1, 1931.
Washington, U.S. Government Printing Office, 1931, pp. ii, 16, ills. Aeronautics Bulletin No. 7-H.

— Aeronautics Branch. Air navigation maps. July 1, 1931.
Washington, U.S. Government Printing Office, 1931, pp. ii, 18, maps. Aeronautics Bulletin No. 10.

— Aeronautics Branch: Air traffic rules. Extract from air commerce regulations December 1, 1929.
Washington, U.S. Government Printing Office, 1929, pp. 12, ills. Aeronautics Bulletin No. 15.

— Aeronautics Branch: Aircraft engine testing. July 1, 1930.
Washington, U.S. Government Printing Office, 1930, pp. 27, ills., tabls., diagrs. Aeronautics Bulletin No. 12.

UNITED STATES DEPARTMENT OF COMMERCE. Aeronautics Branch. Airport design and construction. July 1, 1931.
Washington, U.S. Government Printing Office, 1931, pp. ii, 58, ills., tabls., diagrs. Aeronautics Bulletin No. 2.

— Aeronautics Branch. Airport rating regulations. Effective as amended January 1, 1929.
Washington, U.S. Government Printing Office, 1929, pp. ii, 23, diagrs. Aeronautics Bulletin No. 16.

— Aeronautics Branch. Airport rating regulations. Effective as amended September 1, 1930.
Washington, U.S. Government Printing Office, 1930, pp. ii, 27, diagrs. Aeronautics Bulletin No. 16.

— Aeronautics Branch. Airports and landing fields. Revised January 1, 1931.
Washington, United States Government Printing Office, 1931, pp. 16. Aeronautics Bulletin No. 5.

— Aeronautics Branch. Airway bulletin.
Washington, U.S. Government Printing Office, 1931, ills., maps, diagrs.

— Aeronautics Branch. Airway map of the United States, August 1, 1931.
Washington, United States Government Printing Office, 1931. Aeronautics Bulletin No. 8.

— Aeronautics Branch. Airway strip map list . . .
Washington, U.S. Government Printing Office, 1929, pp. 7, maps. Aeronautics Bulletin No. 10.

— Aeronautics Branch. Airworthiness requirements of air commerce regulations for aircraft. Effective January 1, 1931.
Washington, U.S. Government Printing Office, 1931, pp. ii, 86, ills., tabls., diagrs. Aeronautics Bulletin No. 7-A.

— Aeronautics Branch. Airworthiness requirements of air commerce regulations for aircraft. Effective as amended January 1, 1932.
Washington, U.S. Government Printing Office, 1931, pp. ii, 99, ills., tabls., diagrs. Aeronautics Bulletin No. 7-A.

— Aeronautics Branch. Civil aeronautics in the United States, July 1, 1931.
Washington, United States Government Printing Office, 1931, pp. 56. Aeronautics Bulletin No. 1.

— Aeronautics Branch. Control of airplanes at low speeds by means of conventional ailerons. July 1, 1931.
Washington, U.S. Government Printing Office, 1931, pp. ii, 24, ills., tabls., diagrs. Aeronautics Bulletin No. 15.

— Aeronautics Branch. Department of Commerce regulations governing entry and clearance of aircraft effective as amended April 7, 1931, and United States airport of entry regulations effective November 1, 1931.
Washington, U.S. Government Printing Office, 1931, pp. ii, 5. Aeronautics Bulletin No. 7-c.

— Aeronautics Branch. Descriptions of airports and landing fields in the United States. September 1, 1931.
Washington, U.S. Government Printing Office, 1931, pp. ii, 169. Airway Bulletin No. 2.

— Aeronautics Branch. Establishment and operation of Department of Commerce intermediate landing fields. July 1, 1931.
Washington, United States Government Printing Office, 1931, pp. 8. Aeronautics Bulletin No. 11.

— Aeronautics Branch. General airway information. September 1, 1931.
Washington, U.S. Government Printing Office, 1931, pp. ii, 184, ills., maps, tabls., diagrs. Airway Bulletin No. 1.

UNITED STATES DEPARTMENT OF COMMERCE. Aeronautics Branch. Gliders and gliding. July 1, 1930.
Washington, U.S. Government Printing Office, 1930, pp. ii, 8. Aeronautics Bulletin No. 22.

— Aeronautics Branch. Inspection service memorandum, No. 1.
Washington, U.S. Government Printing Office, 1931.

— Aeronautics Branch. List of air navigation charts. October 15, 1929.
Washington, U.S. Government Printing Office, 1929, pp. 7, maps. Aeronautics Bulletin No. 10.

— Aeronautics Branch. List of airports and landing fields. Revised October 15, 1931.
Washington, United States Government Printing Office, 1931, pp. 18.

— Aeronautics Branch. Medical examiners of the aeronautics branch. June 1, 1931.
Washington, United States Government Printing Office, 1931, pp. 12. Aeronautics Bulletin No. 23.

— Aeronautics Branch. Notes on airport lighting, April 15, 1929.
Washington, 1929, ills.

— Aeronautics Branch. Parachute supplement. Air commerce regulations. Effective July 1, 1930.
Washington, U.S. Government Printing Office, 1930, pp. 5. Aeronautics Bulletin No. 7D.

— Aeronautics Branch. Reduction of airplane noise. October 1, 1930.
Aeronautics Bulletin No. 25, Washington, U.S. Government Printing Office, 1930, pp. ii, 21, tabls., diagrs.

— Aeronautics Branch. Regulations governing entry and clearance of aircraft, effective as amended April 7, 1931, and United States airport of entry regulations, effective November 1, 1931.
Washington, United States Government Printing Office, 1931, pp. 5. Aeronautics Bulletin No. 7-C.

— Aeronautics Branch. Regulations governing establishment and certification of aeronautical lights and instructions for marking obstructions to air navigation. August 1, 1930.
Washington, U.S. Government Printing Office, 1930, pp. ii, 8. Aeronautics Bulletin No. 9.

— Aeronautics Branch. Relative lift distribution in any biplane. July 1, 1929.
Washington, U.S. Government Printing Office, 1929, pp. 21, tabls. Aeronautics Bulletin No. 14.

— Aeronautics Branch. Report of Committee on Airport Zoning and Eminent Domain. December 18, 1930.
Washington, U.S. Government Printing Office, 1931, pp. ii, 14.

— Aeronautics Branch. School supplement of Air Commerce Regulations. Effective as amended January 1, 1931.
Washington, U.S. Government Printing Office, 1931, pp. ii, 6. Aeronautics Bulletin No. 7-B.

— Aeronautics Branch. Second report of liaison committee on aeronautical radio research. October 15, 1931.
Washington, United States Government Printing Office, 1931, pp. 33.

— Aeronautics Branch. State aeronautical legislation and compilation of state laws. Revised to September 1, 1929.
Washington, U.S. Government Printing Office, 1929, pp. iii, 76. Aeronautics Bulletin No. 18.

— Aeronautics Branch. Trend in airplane design as indicated by approved type certificates. April 1, 1931.
Washington, U.S. Government Printing Office, 1931, pp. ii, 16. Aeronautics Bulletin No. 21.

UNITED STATES DEPARTMENT OF COMMERCE. Aeronautics Branch. *See* National Conference on Uniform Aeronautic Regulatory Laws: Proceedings of the National Conference on Uniform Aeronautic Regulatory Laws, December 16 and 17, 1930, Washington, D.C.

- *See* Airworthiness: Amended airworthiness requirements. Effective January 1.
- *See* Young, Clarence M.: Activities of the Aeronautics Branch Department of Commerce.
- Bureau of the Census. Census of manufactures: 1927. Aircraft, motor vehicles, motor-vehicle bodies and motor-vehicle parts, motor cycles and bicycles.

Washington, U.S. Government Printing Office, 1929, pp. 24, tabls.

UNITED STATES DEPARTMENT OF STATE. Air navigation. Arrangement between the United States of America and Italy. Effectuated by exchange of notes signed October 13 and 14, 1931. Effective October 31, 1931.

Washington, United States Government Printing Office, 1931, pp. 11. Department of State. Publication No. 248. Executive Agreement Series No. 24.

- Regulations to govern air navigation in the Canal Zone. Promulgated by the Secretary of State. September 22, 1931.

Washington, U.S. Government Printing Office, 1931, pp. iii, 36. Publication, No. 249.

UNITED STATES DEPARTMENT OF THE NAVY. Flight manual. Training seaplanes.

Bureau of Navigation, Aviation Training Pamphlet, N-1, Washington, U.S. Government Printing Office, 1930, pp. iv, 64, ills., map.

Prepared by the instruction staff, United States Naval Air Station, Pensacola, Florida.

- Syllabus for the training of student naval aviators and student naval aviation pilots. U.S. Navy and U.S. Naval Reserve, U.S. Marine Corps and U.S. Marine Corps Reserve heavier-than-air craft.

Washington, U.S. Government Printing Office, 1931, pp. ii, 14, tabls.

- Board on Naval Airship Base. Naval airship base. Letter from the Secretary of the Navy transmitting report covering selection of locations deemed most suitable for a naval airship base.

Washington, U.S. Government Printing Office, 1929, pp. iii, 58, tabls. 71st Congress, 2d Session. House Document 132.

- Bureau of Navigation. Revised syllabus for the training of student naval aviators and student naval aviation pilots. U.S. Navy and U.S. Naval Reserve, U.S. Marine Corps and U.S. Marine Corps Reserve. Heavier-than-air craft.

Washington, U.S. Government Printing Office, 1930, pp. ii, 10, tabls.

- Bureau of Navigation. Syllabus for the training of student naval aviators and student naval aviation pilots. U.S. Navy and U.S. Naval Reserve, U.S. Marine Corps and U.S. Marine Corps Reserve heavier-than-air craft.

Washington, United States Government Printing Office, 1931, pp. ii, 14, tabls.

UNITED STATES DEPARTMENT OF WAR. Annual report of the Assistant Secretary of War, Hon. F. Trubee Davison.

Annual Report of the Secretary of War 1931, Washington, United States Government Printing Office, 1931, pp. 29-36. Report on the condition of the Air Corps.

- Identification of aircraft. Prepared under direction of the Chief of Air Corps.

Washington, U.S. Government Printing Office, 1929, pp. 6, 7-62 numb., ills. War Department, Training Manual No. 2170-35

292 NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

UNITED STATES DEPARTMENT OF WAR. Report of Air Corps procurement operations, fiscal year 1931. (Sec. 10 (m), 44 Stat.L. 787).

Annual Report of the Secretary of War 1931, Washington, United States Government Printing Office, pp. 253-259.

UNITED STATES HYDROGRAPHIC OFFICE. Position tables for aerial and surface navigation.

Washington, U.S. Government Printing Office, 1931, pp. 223, tabls., diagrs.

UNITED STATES NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. *See* National Advisory Committee for Aeronautics.

UNITED STATES NAVAL AIR STATION, LAKEHURST, N.J. Syllabus for the training of student naval aviators, lighter-than-air and student naval aviation observers, lighter-than-air. U.S. Navy and U.S. Naval Reserve, U. S. Marine Corps and U.S. Marine Corps Reserve, lighter-than-air craft.

Washington, U.S. Government Printing Office, 1931, pp. ii, 21.

UNITED STATES NAVAL AIR STATION, PENSACOLA, FLORIDA. Flight manual. Training landplanes.

Washington, U.S. Government Printing Office, 1930, pp. iv, 73, ills., maps.

UNITED STATES NAVY. The U.S. Navy airship "Akron."

Flight, No. 1200, Vol. 23, No. 52 (Dec. 25, 1931), London, p. 1267, ill.

— *See Akron: The Navy airship "Akron."*

— *See Boone, Andrew R.: Engine service in the Navy.*

— *See Moffett, William A.: Five progressive years in naval aviation.*

— *See Moffett, William A.: Glancing back at 1930. Naval aviation.*

UNITED STATES OFFICE OF CHIEF OF AIR CORPS. Instructions for handling titanium tetrachloride, smoke-screen material. Prepared under direction of the Chief of Air Corps.

Washington, June 6, 1931, pp. 5, diagrs. War Department Technical Regulations 1170-88.

UNITED STATES ORDNANCE DEPARTMENT. Browning aircraft machine gun, caliber .50, M1921. Prepared under the direction of Chief of Ordnance.

Washington, July 15, 1931, pp. 45, ills., diagrs. War Department, Technical Regulations 1300-50B.

UNITED STATES POST OFFICE DEPARTMENT. Air mail contracts. Letter from the Postmaster General transmitting, in response to Senate Resolution No. 394, certain information relative to air mail contracts, existing air mail routes in the United States, new routes to be established, and names of officers and attorneys that have been employees of the United States Government within the past five years . . .

Washington, U.S. Government Printing Office, 1931, pp. 123, tabls. 71st Congress, 3rd Session. Senate. Document 315.

UNIVERSITIES. *See* Stimson, Thomas E., jr.: Aviation in the universities.

V

VACUUM tubes. *See* Eastman, Fred Scoville: Vacuum-tube control for electric wind-tunnel balances.

VALK, WILLIAM B., Jr. Patents.

Curtiss-Wright Review, Vol. 2, No. 1 (March 1931), New York, pp. 4, 20.

VAN DEN BROEK, JOHN ABRAHAM. Elastic energy theory.

New York, J. Wiley and Sons, inc.; London, Chapman & Hall, ltd., 1931, pp. 260, ills., diagrs.

VAS DIAS, S. Met den Prins, twee politie-agenten en een hofjager de lucht in. *Het Vliegveld*, 15de Jaarg., No. 10 (Oct. 1931), Amsterdam, pp. 359-360.

VAN ORMAN, WARD T. A preliminary meteorological survey for airship bases on the middle Atlantic seaboard. *Monthly Weather Review*, Vol. 59, No. 2 (Feb. 1931), Washington, pp. 57-64, maps.

VAN TIJEN. *See* P.: *De ontvangst van Van Tijen*.

VAN ZANDT, J. PARKER. Subsidizing civil aviation in Europe and America. *U.S. Air Services*, Vol. 16, No. 2 (Feb. 1931), Washington, pp. 15-18.

VANCOUVER. Vancouver's airport. *Flight*, No. 1189, Vol. 23, No. 41 (Oct. 2, 1931), London, pp. 1026-1027, ill.

VASILESCO, FLORIN. Mécanique des Fluides.—Sur une méthode de M. Ria-bouchinsky ayant pour but de résoudre le problème de Dirichlet en vue du calcul du potentiel des vitesses. *C.R. Acad. Sci.*, T. 193, No. 23 (7 déc. 1931), Paris, pp. 1162-1164.

VAUTHIER, ARSÈNE MARIE PAUL. Le danger aérien et l'avenir du pays; préface de M. le maréchal Lyautey. Paris, Berger-Levrault, 1930, pp. xi, 385, ills.

VEEDER, VAN VECHTEN. The legal relation between aviation and admiralty. *Air Law Review*, Vol. 2, No. 1 (Jan. 1931), New York, pp. 29-38.

VENICE. *See* Montanari, D.: Contributo allo studio del regime anemologico a Venezia.

VENTILATION. *See* Lockspeiser, B.: Ventilation of 24-ft. wind tunnel.

VERDINELLI, ARMANDO. La Compagnia nazionale aeronautica; 1920-1931. Roma, Compagnia naz. aeronautica (Grafia, s.a.i. ind. grafiche), 1931, pp. 176, ills.

VERDURAND, A. Les tendances actuelles de la technique. *Technique Moderne*, T. 23, No. 5 (mars 1931), Paris, pp. 151-159, ills.

VERDUZIO, RODOLFO. Sollecitazioni alla partenza ed all'ammarramento negli idrovolanti. *L'Aeroteenica*, Vol. 11, N. 11 (nov. 1931), Roma, pp. 1343-1405, ills., diagrs. Abstract in English, pp. 1488-1489.

VERGA, ETTORE. Bibliografia vinciana, 1493-1930. Bologna, N. Zanichelli, 1931, 2 vols.

VERTICAL FLIGHT. *See* Grose, Parlee Clyde: The problem of vertical flight.

VEST, JOHN P. W. Opportunities for seaplane flying on the Atlantic coast. *Nat. Aer. Mag.*, Vol. 9, No. 10 (Oct. 1931), Washington, pp. 11-21, ills.

VEST, J. R. W. Charting Cuba's coastline from the sky. *Nat. Aer. Mag.*, Vol. 9, No. 2 (Feb. 1931), Washington, pp. 9-12, ills.

VIBRATION. Vibration in aeroplanes. *Aeroplane*, Vol. 41, No. 22 (Nov. 25, 1931), London, pp. 1230-1232.

— Vibrations. A miniature portable universal 3-component vibration meter. *Flight*, No. 1194, Vol. 23, No. 46 (Nov. 13, 1931), London, pp. 1132-1133, ills.

— *See* Flutter.

— *See* Sezawa, Katsutada: On the lateral vibration of a rectangular plate clamped at four edges.

VICKERS. The London showroom of Messrs. Vickers limited. *Engineering*, Vol. 131, No. 3412 (June 5, 1931), London, pp. 741-742, ills.

VICKERS. The supermarine S.6 B monoplane. Main particulars published for the first time.

Flight, No. 1188, Vol. 23, No. 40 (Oct. 2, 1931), London, pp. 981-982.

— Vickers accessories for aircraft.

Weybridge, Surrey, Vickers (aviation) limited [1931], pp. 188, ills., tabls., diagrs.

— The Vickers "Vildebeest."

Flight, No. 1193, Vol. 23, No. 45 (Nov. 6, 1931), London, pp. 1097-1098, ills.

— See Schneider trophy: The Schneider Trophy contest.

VIEHMANN, HEINRICH. See Brintzinger, Wilhelm, Paul v. Handel und Heinrich Viehmann: Erschütterungsstörungen bei ortsbeweglichen Empfängern.

VIGILANT. *pseud.* German war birds.

London, J. Hamilton, ltd. [1931], pp. 264, ports.

VIRGIN, ERIC. Flygvapnets nye chef.

Flygning, Årg. 9, N:R 12 (Dec. 1931), Stockholm, pp. 235, 246, port.

VIRULY, A. In de schroefwind.

Amsterdam, A. Blitz, 1931, pp. 266, ills., diagrs.

— Typen van de vlieghei.

Het Vliegveld, 15de Jaarg., No. 3 (Maart 1931), Amsterdam, pp. 84-85.

— "V66r vrij?" . . . "Contact!" Van de Soesterbergsche vlieghei.

Amsterdam, A. Blitz, 1931, pp. 274, ills.

VISCOSEITY. See Peters, H.: Effect of viscosity in speed measurements with double-throat venturi tubes.

VISCOUS FLUIDS. See Gay, A.: Recherches sur l'hydrodynamique des liquides visqueux.

— See Girault, Maurice: Méthode géométrique de tracés de profils d'ailes et de corps fuselés. Essai sur la viscosité en mécanique des fluides.

VISIBILITY. Visibility and collisions.

Aeroplane, Vol. 40, No. 7 (Feb. 18, 1931), London, p. 270.

— See Hungtington, Dwight: Adequate visibility for planes.

— See Kurz, Gerhard: Measurement of visibility from the pilot's cockpit on different airplane types.

— See Kurz, Gerhard: Messung der Sicht vom Führersitz verschiedener Flugzeugmuster.

— See Toulman-Smith, A. K.: The range of air line beacons.

VISION. See Grindley, G. C.: Reports of the Committee upon the Physiology of Vision. IX. Psychological factors in peripheral vision.

— See Gutkowski, Tadeusz: Teorja akomodacji barwnej oka, zaobserwowanej przez prof. Polack'a.

VITT, LEONARD. Einar Lundborg.

Flygning, Årg. 9, N:R 2 (Febr. 1931), Stockholm, p. 27, port.

— Ernst Fogman 50 ar.

Flygning, Årg. 9, N:R 1 (Jan. 1931), Stockholm, p. 3, port.

— Flygarprofiler Erik Rasmussen.

Flygning, Årg. 9, N:R 6 (Juni 1931), Stockholm, p. 109, port.

VITT, LEONARD. Flygarprofiler Kapten Wäinö Bremer.
Flygning, Årg. 9, N:R 7 (Juli 1931), Stockholm, p. 129, port.

— Flygarprofiler Knut Björkvali.
Flygning, Årg. 9, N:R 9 (Sept. 1931), Stockholm, p. 169, port.

VOITOUX. See Charcot, Jean: Rapport du Dr. Jean Charcot sur le travail du Commandant Voitoux "La navigation aérienne transatlantique."

VOM FLIEGEN. See Deutsche Roten Kreuz Vom Fliegen. Zeitschrift für das Jugendrotkreuz.

VORTICES. See Galianella, L.: Sulle correnti generate da una xoppia di vortici o di sorgenti.

— See Havelock, T. H.: Stability of motion of rectilinear vortices in ring formation.

— See Jones, Arthur Taber: The stability of a single file of straight vortices.

Voss. Militärflugzeuge von heute.
Die Umschau, 35. Jahrg., Heft 41 (10. Okt. 1931), Frankfurt a.M., pp. 813-814, ill.

Voss, FRED. See Gerrish, Harold C., and Fred Voss: Investigation of the discharge rate of a fuel-injection system.

W

WACKETT, L. J. Launching by catapult.
Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1192, Vol. 23, No. 44 (Oct. 30, 1931), London, pp. 1086f-1086h, 78-80, ills.

WADDELL, R., and F. WORTON. The machining of stainless steel.
Aeronautical Engineering, suppl. to the Aeroplane, Vol. 40, No. 17 (April 29, 1931) London, pp. 784, 786, 788, 790, ill., diagrs.

WADDINGTON, WILLIAM H. Reducing hangar costs.
Western Flying, Vol. 10, No. 1 (July 1931), Los Angeles, Calif., pp. 70-71.

WÄRMESEGELN. See Kronfeld, Robert: Wärmesegeln, ein neuer Flugsport.

WAGHORN, H. R. D. H. R. D. Waghorn.
Aeroplane, Vol. 40, No. 19 (May 13, 1931), London, pp. 868, 870, port.

WAGNER, HERBERT. Flat sheet metal girder with very thin metal web. Parts I, II, III.
National Advisory Committee for Aeronautics, Technical Memorandums Nos. 604, 605, 606, Feb. 5, 12, 19, 1931, Washington, February 1931, pp. 38, 38, 39, diagrs.

— Landing of seaplanes.
National Advisory Committee for Aeronautics, Technical Memorandums No. 622, May 28, 1931, Washington, May 1931, pp. 15, diagrs.

— Über die Landung von Seeflugzeugen.
Zeitschr. Flugt Motorluftsch., 22. Jahrg., 1. Heft (14. Jan. 1931), München und Berlin, pp. 1-8, ills., diagrs., tabl.

WAGNER, LAWRENCE T. Lubrication.
Western Flying, Vol. 9, No. 1 (Jan. 1931), Los Angeles, Calif., pp. 35-36.

WAGNER, STERLING ROBACKER. The modern airport. A study in landscape engineering of the location, design, construction and management of airports, together with a suggested design for the municipal airport at Syracuse, N.Y.
Syracuse, N.Y., 1931, pp. 109, maps., plans, diagrs., tabls.

WAIT, WILLIAM, JR. The value of air races.
Aero Digest, Vol. 18, No. 5 (May 1931), New York, pp. 46-48, 132, ills.

WALDEN, C. D. *See* Rothrock, Addison M., and C. D. Waldon: Some characteristics of fuel sprays at low-injection pressures.

WALKER, ALTON H. My next airplane.
Airway Age, Vol. 13, No. 14 (Oct. 3, 1931), New York, pp. 281-283.

WALKER, DONALD F. Bringing soaring up-to-date.
Airway Age, Vol. 13, No. 1 (Jul. 4, 1931), New York, pp. 52, 63.

— A glider year.
Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 58-61, ills.

WALKER, W. S. *See* Fage, A., V. M. Falkner, and W. S. Walker: Experiments on a series of symmetrical Joukowski sections.

WALSH, H. VANDERVOORT. Architectural principles applied to airport design.
Aero Digest, Vol. 19, No. 2 (Aug. 1931), New York, pp. 35-36, 128, ills.

WALSH, RAYCROFT. Dependability in propellers.
U.S. Air Services, Vol. 16, No. 8 (Aug. 1931), Washington, pp. 36-37.

WALTER, FRANZ. Entwicklung des Motorflugsportes im Deutschen Luftfahrt-Verband e. V.
Luftschau, 4. Jahrg., No. 7 (10. April 1931), Berlin, pp. 49-50, ill.

— Gedanken um den Motor flugsport in Rahmen des DLV.
Luftschau, 4. Jahrg., Nr. 1 (10. Jan. 1931), Berlin, p. 4.

WALTER, FREIDRICH. Hünefeld, "Ein Leben der Tat".
Potsdam, Ernte Verlag G.m.b.H., 1930, pp. 200.

WARD, KENNETH E. The effect of small variations in profile of airfoils.
National Advisory Committee for Aeronautics, Technical Notes No. 361, Jan. 20, 1931, Washington, January 1931, pp. 9, diagrs., tabl.

— Interference effects and drag of struts on a monoplane wing.
National Advisory Committee for Aeronautics, Technical Notes No. 365, Feb. 17, 1931, Washington, February 1931, pp. 12, ills., diagrs., tabls.

— The interference effects on an airfoil of flat plate at mid-span position.
National Advisory Committee for Aeronautics, Technical Notes No. 403, Dec. 22, 1931, Washington, December 1931, pp. 16, ills., diagrs., tabls.

WARD, NAIRNE F. *See* Younger, John Elliott, and Nairne F. Ward: Airplane construction and repair; a textbook for airplane mechanics, by John E. Younger . . . with chapters on heat treatment and welding, by Nairne F. Ward.

WARDEN, R. *See* Cowley, W. L., and R. Warden: Tests of quarter scale models of high speed seaplanes for the Schneider Trophy Contest of 1927. Introduction, and Section I. Tests on the Supermarine S. 5. models.

— *See* Cowley, W. L., and R. Warden: Tests of quarter scale models of high speed seaplanes for the Schneider Trophy Contest of 1927. Section II. Tests on the Gloster IV models.

— *See* Cowley, W. L., and R. Warden: Tests on quarter scale models of high speed seaplanes for the Schneider Trophy Contest of 1927. Section III. Tests on the Crusader models.

— *See* Cowley, W. L., and R. Warden: Tests on quarter scale models of high speed seaplanes for the Schneider Trophy Contest of 1927. Section IV. Comparison with full scale and conclusions.

WARING-BROWN, R. Aeroplane braking systems. A comprehensive survey of the problem of fitting wheel brakes and types at present in use.
Aircraft Engineering, Vol. 3, No. 28, 29 (June, July 1931), London, pp. 139-140, 157-161, ills.

— Hydraulic brakes for aircraft. The theoretical and practical qualities of the type discussed with descriptions of prominent examples.
Aircraft Engineering, Vol. 3, No. 34 (Dec. 1931), London, pp. 301-304, 318, ills.

WARNER, EDWARD PEARSON, and S. PAUL JOHNSTON. Aviation handbook.
New York and London, McGraw-Hill Book Company, inc., 1931, pp. xi. 715, ills., diagrs.

WARNER, EDWARD PEARSON. Pages from an air race notebook.
Aviation, Vol. 30, No. 10 (Oct. 1931), New York, pp. 576-578, ills.

— Racing rules and handicap races.
Aviation, Vol. 30, No. 12 (Dec. 1931), New York, pp. 682-685, ill.

— What of the year to come.
Aviation, Vol. 30, No. 1 (Jan. 1931), New York, pp. 10-13.

WARSAP, J. H. *See* Fage, A., and J. H. Warsap: The effects of turbulence and surface roughness on the drag of a circular cylinder.

WASHINGTON. *See* Hayes, Robert: Alaska-Washington.

WASHINGTON, DISTRICT OF COLUMBIA. *See* United States Congress. Joint Commission on Airports. Airports, National Capital. Report of the Joint Commission on airports, Congress of the United States, pursuant to Public Resolution No. 106, Seventieth Congress, to establish a Joint Commission on Airports.

— *See* United States Congress. Joint Commission on Airports: Recommending acquisition of airports. . . . Report.

— *See* United States Congress. Senate. Committee on the District of Columbia: Commercial airport for District of Columbia . . . Report to accompany S. 3901.

WASMUND, E. Flugbeobachtungen über mittel und Osteuropäischen gewässern.
Geographische Zeitschrift, Bd. 36, 1930, Leipsic, pp. 528-546, 593-611.

WASSERKUPPE. *See* Patterson, John McClure: At the famous Wasserkuppe.

WASSON, EVERETT L. Flying in the Yukon.
Western Flying, Vol. 10, No. 3 (Sept. 1931), Los Angeles, Cal., pp. 24-26, ills.

WATEAU, ANDRÉ. Le programme du vol sans moteur en France.
L'Aéophile, 39e année, No. 6 (15 juin 1931), Paris, p. 161.

WATER recovery. *See* Burgess, C. P.: Water-recovery apparatus for airships.

WATSON, WILBUR JAY. Building the world's largest airship factory and dock; a complete description of this gaunt structure of the Goodyear-Zeppelin Corporation at Akron, Ohio.
[Akron, 1930], pp. 10, ills.

WAVES. *See* Galbrun, Henri: Propagation d'une onde sonore dans l'atmosphère et theorie des zones de silence.

WAYNE, ANTHONY. New type wind tunnel to test airplanes.
National Glider and Airplane News, Vol. 3, No. 2 (Sept. 1931), New York, p. 41, ills.

WEAD, FRANK. Wings for men.
New York & London, The Century Company, [1931], pp. xiii, 333, ills.

WEAD, FRANK WILBER. Airplane parts and maintenance.
Scranton, Pa., International Text-Book Company, [1931], pp. iv, 64, 76, ills.

— Types of aircraft and materials.
Scranton, Pa., International Textbook Company [1931], pp. v, 63, 39, 60, ill.

WEATHER. Keeping tab on the weather.
Western Flying, Vol. 10, No. 3 (Sept. 1931), Los Angeles, Cal., p. 22.

— Notes on the weather of 1930.
Aeroplane, Vol. 40, No. 2 (Jan. 14, 1931), London, p. 61.
— See Blake, Dean: Weather reporting for the Air Corps.
— See Grant, Hugh Duncan: Reading the weather map.
— See Gregg, Willis Ray: Some observations of a weather man in Europe.
— See Samuels, L. T.: Airplanes for regular upper-air observations.

WEATHER vane. Een nieuwe windwijzer voor het nachtluchtverkeer.
Het Vliegveld, 15de Jaarg., No. 4 (April 191), Amsterdam, pp. 126-128, ills.

WEBB, J. GRISWOLD. National conference on uniform aeronautic regulatory laws. Response on behalf of the states.
Air Law Review, Vol. 2, No. 1 (Jan. 1931), New York, pp. 55-56.

WEBB, L. D. The flying fleet heads south.
U.S. Air Services, Vol. 16, No. 2 (Feb. 1931), Washington, pp. 19-24, ill.

— Know your way around.
U.S. Air Services, Vol. 16, No. 9 (Sept. 1931), Washington, pp. 11-14, ills.
— Improving the breed.
U.S. Air Services, Vol. 16, No. 12 (Dec. 1931), Washington, D.C., pp. 13-16.
— Your propeller.
U.S. Air Services, Vol. 16, No. 1 (Jan. 1931), Washington, pp. 17-20, ill.

WEBER, K. Blindfliegen.
Die Umschau, 35. Jahrg., Heft 30 (25. Juli 1931), Frankfurt a.M., pp. 598-600, ills.

WEEMS, PHILIP VAN HORN. Air navigation.
New York and London, McGraw-Hill Book Company, inc., 1931, pp. xiii, 589, ills., diagrs.

— The Gatty ground speed and drift indicator.
The Air Legion Aeronautical News Vol. 1, No. 1 (Dec. 4, 1931), Washington, pp. 3-6, ills.

WEICK, FRED E. Aircraft propeller design.
New York and London, McGraw-Hill Book Company, inc., 1931, pp. 294.

— The behavior of conventional airplanes in situations thought to lead to most crashes.
National Advisory Committee for Aeronautics, Technical Notes No. 363, Feb. 3, 1931, Washington, February 1931, pp. 13, ill., diagrs.

WEIDINGER, HANNS. Liquid cooling of aircraft engines.
National Advisory Committee for Aeronautics, Technical Memorandums No. 649, Dec. 3, 1931, Washington, December 1931, pp. 11, ills., diagrs.

— Versuche mit Heisskühlung am Flugmotor.
Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 18. 22. Heft (28 Sept., 28. Nov. 1931), München und Berlin, pp. 541-546, 664, ills., diagrs.

WEINSTEIN, A. Meccanica.—Sur le mouvement d'un fluide à travers un barrage perméable.
Atti della Accademia Nazionale dei Lincei, Anno 328, 1931 (IX), Serie Sesta, Rendiconti, Vol. 14, Fasc. 7-8, Roma, 1931, pp. 276-278.

WEISS, PIERRE THEODORE. *Le poitail bleu du Sagittaire.*
Paris, L. Querelle, 1931, pp. 208.

WEISS, STANISŁAW. *Polćzenia nitowe duraluminjowe. (Assemblages par rivets en duralumin).*

Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 7, (Nr. 37), Warszawa, 1931, pp. 43-78, ills., diagrs., tabls.

Supplement to this article on page 163 of No. 8, 1932.

WELCKER, W. A., JR. *See* Russell, H. W., and W. A. Welcker, jr.: Endurance and other properties at low temperatures of some alloys for aircraft use.

WELDING. *See* George, H. S.: The cause and prevention of heat cracks in aircraft welding. A study of localized stresses.

— *See* Guzzoni, G., e E. Nardi: *La saldatura dei materiali metallici, le sue applicazioni nelle costruzioni aeronautiche.*

— *See* Hardecker, John F.: The spot welding of stainless steel.

— *See* Moyanham, George B.: Methods of testing welds.

— *See* Younger, John Elliott, and Nairne F. Ward: *Airplane construction and repair; a textbook for airplane mechanics . . . with chapters on heat treatment and welding.*

WELLS, G. M. Development of anti-aircraft matériel. New types of anti-aircraft guns—Improved methods for directing fire of guns and for locating and illuminating hostile aircraft.

Mech. Eng., Vol. 53, No. 6 (June 1931), New York, pp. 427-432, ills.

WELLS, JOHN E. The manufacture of precision parts for aircraft engines.
Aviation Engineering, Vol. 5, No. 4 (Nov. 1931), Washington, N.J., pp. 31-33, 48, ills.

WENNEMAN, JOSEPH H. Municipal airports; history, development and legal aspect of municipal airports, text of federal acts and regulations, digests of state aviation laws and of state enabling acts, ordinances of principal cities having airports on main airways, legal and business forms in use in the aviation industry.

Cleveland, O., The Flying Review Publishing Company, [1931], pp. xxvii, 879, ills., diagrs., maps.

WENZINGER, CARL JOSEPH, and JOSEPH A. SHORTAL. The aerodynamic characteristics of a slotted Clark Y wing as affected by the auxiliary airfoil position.
National Advisory Committee for Aeronautics, Report No. 400, Nov. 21, 1931, Washington, U.S. Government Printing Office, 1931, pp. 16, ills., diagrs., tabls.

WENZINGER, CARL JOSEPH. Pressure distribution over a thick, tapered and twisted monoplane wing model-N.A.C.A. 81-J.

National Advisory Committee for Aeronautics, Report No. 367, Feb. 24, 1931, Washington, U.S. Government Printing Office, 1930 [1931], pp. 16, ills., diagrs., tabls.

WENZINGER, CARL JOSEPH, and THOMAS A. HARRIS. The vertical wind tunnel of the National Advisory Committee for Aeronautics.

National Advisory Committee for Aeronautics, Report No. 387, July 15, 1931, Washington, U.S. Government Printing Office, 1931, pp. 10, ills., diagrs.

WENZINGER, CARL JOSEPH. *See* Knight, Montgomery, and Carl J. Wenzinger: Rolling moments due to rolling and yaw for four wing models in rotation.

WERMESKERTEN, HENRI VAN. *De oceaanolvlucht. Modern spel van lucht en oceanen in vier bedrijven.*

Amsterdam, L. J. Veen, 1931, pp. 124.

WERTENSON, F. Development of the high-speed all-wing monoplane.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1187, Vol. 23, No. 39 (Sept. 25, 1931), London, pp. 970a-970d, 65-68, ills., tabls.

— Development of the high-speed Burnelli type monoplane.

Aero Digest, Vol. 19, No. 3 (Sept. 1931), New York, pp. 48-50, 120, diagrs., tabls.

— Investigation and development of the Burnelli type airplane.

Aero Digest, Vol. 18, No. 3 (March 1931), New York, pp. 52-53, 153, diagrs., tabl.

— Investigation of the Burnelli type airplane.

Aero Digest, Vol. 18, No. 1 (Jan. 1931), New York, pp. 57, 128, diagrs.

WESTLAND. Westland rudder bias gear. A device which relieves pilot of fatigue of counteracting turning moment.

Flight, No. 1197, Vol. 23, No. 49 (Dec. 4, 1931), London, p. 1188, ills.

WESTLAND AIRCRAFT COMPANY. The Pterodactyl aeroplane.

Engineering, Vol. 132, No. 3420 (July 31, 1931), London, p. 152, ill.

WESTLAND-HILL. The Westland-Hill pterodactyl Mark IV, aeroplane.

Engineer, Vol. 151, No. 3937 (June 26, 1931), London, p. 706, ill.

— *See* Kjellson, Henry: Westland-Hill's "Pterodactyl" IB.

WESTLAND Rudder Bias Gear. *See* Control: A relief gear for the pilot. A device for reducing the load on the controls by permanently off-setting the rudder.

WESTLANDS. Track assembly at Westlands.

Flight, No. 1155, Vol. 23, No. 7 (Feb. 13, 1931), London, pp. 148-149, ills.

WEYL, A. R. *See* Töpfer, Carl: Auftriebsverteilung und Längsstabilität.

WHEATLEY, JOHN B. Torsion in box wings.

National Advisory Committee for Aeronautics, Technical Notes No. 366, Feb. 24, 1931, Washington, February 1931, pp. 44, diagrs.

WHEELS. Internally-sprung wheels.

Flight, No. 1194, Vol. 23, No. 46 (Nov. 13, 1931), London, p. 1131, ills.

— Les roues "ballons".

I'Aérophile, 39e année, No. 3 (15 mars. 1931), Paris, p. 83, ills.

— *See* Dowty, George H.: Aircraft wheels and tyres. A review of current practice with comments on merits and demerits of various types.

— *See* Pippard, A. J. Sutton, and W. E. Francis: The stresses in a radially spoked wire wheel under loads applied to the rim.

— *See* Pippard, A. J. Sutton, and W. E. Francis: Stresses in wired wheels.

WHIRLING arm. *See* Bryant, L. W., and A. S. Halliday: Measurement of lateral derivatives of the whirling arm.

WHITAKER, JACK. Demonstration flights of the new NB trainer.

Aero Digest, Vol. 19, No. 2 (Aug. 1931), New York, p. 66, ills.

WHITE, BERT. 27,000, feet down.—By chute.

Western Flying, Vol. 10, No. 5 (Nov. 1931), Los Angeles, Cal., p. 30.

WHITE, GEORGE R. Zoom!

New York, Toronto, Longmans, Green and Co., 1931, pp. ix, 182, ills.

WHITE, H. S. *See* Bridgeman, O. C., C. A. Ross and H. S. White: Airplane fuel-line temperature.

WHITE, MAT. *See* White, Percival, and Mat White: *Gliding and soaring; an introduction to motorless flight.*

WHITE, PERCIVAL, and MAT WHITE. *Gliding and soaring, an introduction to motorless flight.*

New York, Whittlesey House, McGraw-Hill Book Company, inc., 1931, pp. xiv, 234, ills., ports., diagrs.

WHITLOCK, T. G. *Elementary applied aerodynamics.*

Oxford, The Clarendon Press, 1931, pp. viii, 240, ills., diagrs.

WHITNEY, E. G. *See* Spanogle, J. A., and E. G. Whitney: *The effectiveness of a double-stem injection valve in controlling combustion in a compression-ignition engine.*

WHITTLE, F. O. F. *The turbo-compressor and the supercharging of aero engines.* Journ. Roy. Aer. Soc., Vol. 35, No. 251 (Nov. 1931), London, pp. 1047-1074, diagrs.

WHITTLE, J. *Re jet propulsion.*

Journ. Roy. Aer. Soc., Vol. 35, No. 243 (March 1931), London, pp. 261-263, ills.

WHYT LAW-GRAY, R., and H. S. PATTERSON. *Smoke. A study of aerial disperse systems.*

London, Edward Arnold & Co., pp. viii, 192, ills., diagrs. Provides a comprehensive survey of present knowledge of the properties and behavior of smokes.

WIBAULT. *The Wibault 280 T. 10 commercial airplane (French).* An all-metal, cantilever, low-wing monoplane.

National Advisory Committee for Aeronautics, Aircraft Circulars No. 140, March 24, 1931, Washington, March 1931, pp. 5, ills.

WIBAULT-PENHOËT. *Wibault-Penhoët 281 T. 12. 3 Gnome-Rhône "Titan Majors."*

Flight, No. 1177, Vol. 23, No. 29 (July 17, 1931), London, p. 699, ill.

WICHITA. *See* Pryor, Edwin W.: *Wichita's municipal airport.*

WIEN, WILHELM, CARL, WERNER, OTTO, FRITZ, FRANZ, und F. HARMS. *Handbuch der Experimentalphysik*, Band 1, 1926; Band 2, Leipzig, 1926; unter mitarbeit von H. Lenz, Band 3, 1929, Band 4, 1. Teil, 1931; Band 4, 3. Teil, 1930. Band 1, *Mess-Methoden und Mess-Technik* von Ludwig Holborn, *Technik des Experiments* von Ernest von Angerer. Band 2, *Mechanik des Messenpunktes und der starren Körper* von Arthur Haas. Band 3, *Mechanik, 2. Teil, Technische Mechanik* von Ludwig Föppl.

— *Handbuch der experimentalphysik. Band I. Mess-Methoden und Mess-Technik* von Ludwig Holborn. *Technik des experiments* von Ernst von Angerer.

Leipzig, Akademische Verlagsgesellschaft m.b.h., 1926, pp. xx, 332; 333-484, ills.

— *Band 2. Mechanik der Massenpunkte und der starren Körper* von Arthur Haas.

Leipzig, Akademische Verlagsgesellschaft m.b.h., 1926, pp. xiv, 355, ills.

WIEN, WILHELM, CARL, WERNER, OTTO, FRITZ, FRANZ, und F. HARMS, unter mitarbeit von H. LENZ. *Handbuch der experimentalphysik. Band 3. Mechanik. 2. Teil. Technische Mechanik* von Ludwig Föppl.

Leipzig, Akademische Verlagsgesellschaft m.b.h., 1929, pp. x, 189, ills.

— *Handbuch der Experimentalphysik, Bd. 4, 1. Teil. Hydro- und aerodynamik. 1. Teil. Strömungslehre und allgemeine versuchstechnik.* Herausgegeben von Ludwig Schiller, Bearbeitet von J. Ackeret, A. Betz, J. M. Burgers, A. Busemann, H. Falkenhagen, H. Mueller, H. Peters, L. Prandtl, H. Schmiedel, O. Tietjens, W. Tollmien.

Leipzig, Akademische Verlagsgesellschaft m.b.H., 1931, pp. xii, 730, ills.

WIEN, WILHELM CARL WERNER OTTO FRITZ FRANZ, und F. HARMS, unter mitarbeit von H. LENZ. Handbuch der Experimentalphysik, Bd. 4, 3. Teil. Hydro- und aerodynamik. 3. Teil. Technische anwendungen. Herausgegeben von Ludwig Schiller. Bearbeitet von O. v. Eberhard, R. Emden, O. Flachsbart, W. Gaede, L. Hope, F. Horn, W. Klemperer, W. Spannhake. Leipzig, Akademische Verlagsgesellschaft m.b.H., 1930, pp. x, 557, illus., diagrs.

WIGLEY, W. C. S. Strength of wooden seaplane hulls (Full sized machines—Third series).

Aer. Res. Comm., Rep. Mem., No. 1376 (Ae. 501-T. 1892, T. 2084), March 1924, London, 1931, pp. 18, diagrs., tabls.

WILBUR WRIGHT MEMORIAL LECTURE. The Wilbur Wright Memorial Lecture.

Glenn L. Martin, The development of aircraft manufacturing.

Aeroplane, Vol. 41, No. 6, 13 (Aug. 5, Sept. 23, 1931), London, pp. 344-346, 768-772, illus.

WILFORD. See K., A.: A rival of the autogiro?

WILKINSON, G. S. Napier Lion series VIIB engine for 1927 Schneider Trophy.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 325-327, illus.

WILLETS, H. N. Radio for airports.

Western Flying, Vol. 9, No. 4 (April 1931), Los Angeles, Cal., pp. 97-98, 106.

WILLIAM FROUDE NATIONAL TANK. Report on experiments with model of seaplane float test with the S. 5 duralumin float. Model 807B.

Aer. Res. Comm., Rep. Mem. No. 1300, Jan. 1931, London, 1931, pp. 263-269, tabls., illus., diagrs.

WILLIAMS, BLAIR. U.S.A. Akron.

Western Flying, Vol. 10, No. 2 (Aug. 1931), Los Angeles, Cal., pp. 23-25, illus.

WILLIAMS, D. Forces on the engine mounting of a spinning aircraft.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1183, Vol. 23, No. 35 (Aug. 28, 1931), London, pp. 862c-862e (59-61), diagrs.

— A graphical method of stressing aeroplane spars.

Aircraft Enginner, Flight Engineering Section, Suppl. to No. 1161, 1165, Vol. 23, No. 13, 17, (March 27, April 24, 1931), London, pp. 272a-272e (17-21), 362a-362c (25-27), diagrs., tabls.

WILLIAMS, D. H., and A. R. COLLAR. Motion of H. M. A. R. 101 under certain assumed conditions.

Aer. Res. Comm., Rep. Mem., No. 1401 (Ae. 522-T. 3132), May 1931, London, 1931, pp. ill. diagrs., tabl.

WILLIAMS, D. H., and A. S. BATSON. Pressure distribution over a yawed aerofoil, by D. H. Williams, with an appendix on rolling moments on a yawed aerofoil, by A. S. Batson.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1931, Vol. 1, London, 1931, pp. 299-321, diagrs., tabls. Rep. Mem. No. 1203 (Ae. 364.)

WILLIAMS, D. H. See Bryant, L. W., and D. H. Williams: The application of the method of operators to the calculation of the disturbed motion of an aeroplane.

WILLIAMS, D. L. HOLLIS. The racing airscrews of 1931.

Aircraft Engineer, Flight Engineering Section, Suppl. to No. 1192, Vol. 23, No. 44 (Oct. 30 1931), London, pp. 1086a-1086c, (73-75), ill., diagrs.

WILLIAMS, FRANK. Landings—Stall and high speed.

Western Flying, Vol. 9, No. 6 (June 1931), Los Angeles, Cal., pp. 30-31, ill.

WILSON, JOHN. Making airplanes safe. Inspection methods of the Boeing Airplane Company.

Western Flying, Vol. 10, No. 5 (Nov. 1931), Los Angeles, Cal., pp. 24-25, illus.

WIMPERIS, H. E. High-speed flying.

Journ. Roy. Aer. Soc., Vol. 35, No. 251 (Nov. 1931), London, pp. 1040-1046.

WIND. A new wind direction indicator.

Flight, No. 1156, Vol. 23, No. 8 (Feb. 20, 1931), London, p. 157, ill.

— See Bolla, Filippo: La frequenza del vento al suolo e a quote a Palermo.

— See Bryant, L. W.: Note on change of wind with height.

— See Dryden, Hugh Latimer, and George C. Hill: Wind pressure on a model of a mill building.

— See Lange, K.O.: Ergebnisse von Messungen vertikaler Windgeschwindigkeiten in der Atmosphäre.

— See Montanari, D.: Contributo allo studio del regime anemologico a Venezia.

WIND channels. See Wind tunnels.

WIND pressure. See Sylvester, Harold MacTavish: An investigation of pressures and vacua produced on structures by wind.

WIND tunnels. How a wind tunnel works.

Western Flying, Vol. 9, No. 4 (April 1931), Los Angeles, Cal., p. 29.

— Large wind tunnel.

Aeronautics, Tech. Rep. Aer. Comm., 1929-1930, Vol. 1, London, 1931, pp. 38-39.

— Why a vertical wind tunnel.

Western Flying, Vol. 9, No. 4 (April 1931), Los Angeles, Cal., p. 41, ill.

— See Bradfield, F. B., and W. G. A. Perring: Drag tests on a large model in a small tunnel.

— See Bradfield, F. B.: The 5-ft. open jet wind tunnel, R.A.F.

— See Bradfield, F. B., K. W. Clark, and R. A. Fairthorne: Maximum lift in closed and open jet tunnels.

— See Bucharest: Wind tunnel of the Bucharest Polytechnic Institute.

— See Clark, K. W., and B. Lockspeiser: Wind tunnel tests on aerofoils at negative incidences.

— See Curtiss: The new Curtiss wind tunnel.

— See Diehl, W. S., and R. F. Anderson: Variable density wind tunnel test data on models of the Hawker Hornbill aeroplane and the AD-1 aerofoil section.

— See Dryden, Hugh Latimer: Reduction of turbulence in wind tunnels.

— See Eastman, Fred Scoville: Vacuum-tube control for electric wind-tunnel balances.

— See Eula, Antonio: Le nouveau tunnel a grande vitesse du ministère de l'aéronautique italienne.

— See Fairbanks, Rollin J.: An American wind tunnel. A description, with a historical introduction of the 8-ft. tunnel at the University of Michigan.

— See Fairbanks, Rollin J.: A university wind tunnel. The Detroit single-return-flow open or closed experimental chamber tunnel described.

— See Glauert, H: The use of small wind tunnels in aeroplane design.

WIND tunnels. *See* Grant, A. J.: Making a compressed-air tunnel.

— *See* Hegener, Henri: *Uit de valschirmwereld*.

— *See* Jacobs, Eastman Nixon: The Aerodynamic characteristics of eight very thick airfoils from tests in the variable density wind tunnel.

— *See* Japan: Japanese wind tunnels.

— *See* Japan: Wind tunnels in Japan.

— *See* Jones, R., and A. H. Bell: Experiments on models of a compressed air wind tunnel.

— *See* Lock, C. N. H.: The interference of a wind tunnel on a symmetrical body.

— *See* Lockspeiser, B.: Ventilation of 24-ft. wind tunnel.

— *See* National Advisory Committee for Aeronautics: Il tunnel aerodinamico per ricerche sui propulsori del Comitato Nazionale Consultivo per l'Aeronautica.

— *See* National Physical Laboratory: National Physical Laboratory. Aerodynamics Department. Wind tunnel design. Fluid motion.

— *See* Olshevsky, Dmitry E.: A new vertical wind tunnel.

— *See* Perring, W. G. A., and C. Callem: Validity of large scale tests in an open jet wind tunnel.

— *See* Sasaki-Tatudirô: Hûtô no kabe ga mokei no yôryoku-keisû ni oyobosu eikyô ni tuite. (On the effect of the walls of a wind tunnel upon the lift coefficient of a model).

— *See* Schilhansl, Max: Versuche an einem Windkanalmodell.

— *See* Stanton, T. E.: Velocity in a wind channel throat.

— *See* Stephens, A. V.: Free model spinning researches. Experiments in the balloon shed at Farnborough and a description of the vertical wind tunnel.

— *See* Wayne, Anthony: New type wind tunnel to test airplanes.

— *See* Wenzinger, Carl Joseph, and Thomas A. Harris: The vertical wind tunnel of the National Advisory Committee for Aeronautics.

WIND vane antenna. *See* Dzwonkowski, Kazimierz: Sondy do powiarów szybkości samolotu.

WINDMILLS. *See* Serragli, G.: Ill moto di un molinello a pale orientabili posto in una corrente variabile.

WINES, JAMES P. Instrument maintenance.

Airway Age, Vol. 12, No. 3 (Mar. 1931), New York, pp. 232-235, ill.

— Reducing fire insurance costs.

Aviation, Vol. 30, No. 8 (Aug. 1931), New York, pp. 473-476, ills.

— Selling air transport.

Aviation, Vol. 30, No. 5 (May 1931), New York, pp. 306-308, ills.

WING radiators. *See* Harris, R. G., L. E. Caygill, and R. A. Fairthorne: Wind tunnel tests on Gloster and Supermarine wing radiators.

WING radiators. *See* Supermarine: Advance results of wind tunnel tests on Supermarine wing radiator.

WING-BEATS. *See* Batten, J. D.: Wing-beats-II.

WINGFIELD, LAWRENCE ARTHUR, and REGINALD BRABANT SPARKS. The law in relation to aircraft.

London, Longman, Green & Co., pp. 304.

WINGS. L'ala a fessura e la sicurezza aerea.

Riv. Aer., Anno 7, N. 4 (aprile 1931), Roma, pp. 137-144, ills.

— L'ala a superficie variabile.

Riv. Aer., Anno 7, N. 4 (aprile 1931), Roma, pp. 144-148, ills.

— Weight estimate of cantilever monoplane wings of corrugated aluminum alloy box-type construction for pursuit, attack, twin-engined observation and transport airplanes. (Airplane branch report.)

Air Corps Information Circular, Vol. 7, No. 662 (Oct. 30, 1931), Washington, United States Government Printing Office, 1931, pp. 25, diagrs., tabs. Air Corps Technical Report No. 3496.

— *See* Abit, Edmond: L'interaction des longerons dans les ailes cantilever.

— *See* Airfoils.

— *See* Alston, R. P.: Maximum lift coefficient of "Starling" with Clark YH wings.

— *See* Arsandaux, L.: Investigation of certain wing shapes with sections varying progressively along the span.

— *See* Baes, L.: Les profiles a larges ailes et les profiles de grande hauteur.

— *See* Bieniek, Czesław: Obliczanie momentu aerodynamicznego dla płatów o stałym kształcie profilu i o różnych obrysach i rozchyleniach.

— *See* Brown, Charles G.: Torsional rigidity in cantilever wings.

— *See* Diehl, Walter Stuart and R. F. Anderson: Variable density wind tunnel test data on models of the Hawker Hornbill aeroplane and the AD-1 aerofoil section.

— *See* Duncanson, F.: Variable lift wings.

— *See* Eula, A.: Sui criteri di scelta dei profili alari.

— *See* Hartshorn, A. S.: Theoretical relationship for a wing with unbalanced ailerons.

— *See* Haus, Fr.: The use of slots for increasing the lift of airplane wings.

— *See* Haus, Fr.: L'utilisation pratique des procédés d'hypersustentation.

— *See* Huber, Maksymilian T.: W sprawie t. zw. współdziałania podłużnic w skrzydłach jadnopłatów.

— *See* Jones, E. T., and K. W. Clark: Full scale maximum lift coefficient of R. A. F. 28 section wing.

— *See* Küssner, Hans Georg: Optico-photographic measurements of airplane deformations.

— *See* Lee, John G.: On the lift and drag of wings.

— *See* Minelli, C.: Le ali dei velivoli e le loro strutture.

WINGS. *See* Minelli, C.: Sull'equilibrio longitudinale del velivolvo ad ala deformabile.

— *See* Mono-spar: Mono-spar wing for fokker F. VII-3M.

— *See* Munk, Max Michael: The choice of a wing section.

— *See* Munk, Max Michael: The composite wing air flow.

— *See* Munk, Max Michael: The creation of lift by a wing section.

— *See* Munk, Max Michael: The "M" wing sections. Article ten of the principles of aerodynamics.

— *See* Munk, Max Michael: Mathematical wing sections. Dr. Max M. Munk's ninth article on the principles of aerodynamics.

— *See* Munk, Max Michael: Plotting wing characteristics.

— *See* Neumark, Stefan: Les profils d'aviation à centre de poussée fixe.

— *See* Parker, A. E.: Wing oscillation.

— *See* Perring, W. G. A., and C. Callen: The influence of a stopped airscrew on the lift and drag of an aerofoil.

— *See* Petersohn, E.: Downwash measurements behind wings with detached flow.

— *See* Pleines, Wilhelm: Flugmessungen über den Einfluss von Handley-Page-Schlitzquerrudern auf Eigenschaften und Leistungen eines Flugzeuges vom Muster Albatros L 75-Ass im Höchstlauftriebsbereich.

— *See* Poggi, L.: Azioni aerodinamiche parallele al movimento sui di un'ala piana animata da moto traslatorio uniforme e da moto oscillatorio.

— *See* Poggi, L.: Sul peso delle ali a sbalzo.

— *See* Rhode, Richard V., and Eugene E. Lundquist: The pressure distribution over a modified elliptical wing tip on a biplane in flight.

— *See* Rhode, Richard V., and Eugene E. Lundquist: The pressure distribution over a semicircular wing tip on a biplane in flight.

— *See* Rhode, Richard V., and Eugene E. Lundquist: The pressure distribution over a square wing tip on a biplane in flight.

— *See* Rhode, Richard V.: The pressure distribution over the wings and tail surfaces of a PW-9 pursuit airplane in flight.

— *See* Sänger, Eugen: Zur genauen Berechnung vielholmigparallelstegiger, ganz- und halbfreitragender, mittelbar und unmittelbar belasteter Flügelgerippe.

— *See* Schrenk, Oskar: Versuche mit einem Absaugeflügel.

— *See* Scott, Merit: The effect of the presence of a grid upon certain characteristics of the airflow at the surface of an airfoil.

— *See* Scott-Hall, S.: Stresses in wing structures. Accelerometer and incidence measurements in various manœuvres.

— *See* Spencer, K. T., and D. Seed: Comparison of calculated and measured elasticity of the wings of an aircraft, in connection with the investigation of wing flutter.

WINGS. *See* Stipa, Luigi: L'ala a turbina.

— *See* Swickard, Andrew E.: Metal-truss wing spars.

— *See* Theodorsen, Theodore: On the theory of wing sections with particular reference to the lift distribution.

— *See* Theodorsen, Theodore: The theoretical distribution on wing sections.

— *See* Trigona della Floresta, F.: Considerazioni sul comando degli aeroplani ad ala deformabile in relazione al centramento.

— *See* Wenzinger, Carl Joseph: Pressure distribution over a thick, tapered and twisted monoplane wing model—N.A.C.A. 81—J.

— *See* Wheatley, John B.: Torsion in box wings.

WINKLER, HORST. Das hochleistungs-segelflugmodell, im auftrage des Jugend-ausschusses des Deutschen Luftfahrt-Verbandes e.v.

Berlin-Charlottenburg, C. J. E. Volckmann nachf., gmbh., 1931, pp. 45, ills.

WINNIE MAE. *See* Post, Wiley, and Harold Gatty: Around the world in eight days; the flight of the Winnie Mae.

WINTERMUTE, GERALD HILES. *See* Kear, Frank Gregg, and Gerald Hiles Wintermute: A simultaneous radio-telephone and visual range beacon for the airways.

WIRE wheels. *See* Pippard, A. J. Sutton, and W. E. Francis: The stresses in a radially spoked wire wheel under loads applied to the rim.

WIRELESS. *See* Brintzinger, Wilhelm, Paul v. Handel und Heinrich Viehmann: Erschütterungsstörungen bei ortbeweglichen Empfängern.

— *See* Eisner, Franz: Über die Zwechmässigkeit der Telegraphie und Telephonie im Flugfunkverkehr mit Berücksichtigung neuer experimenteller Untersuchungen.

— *See* Gloeckner, Heinrich: Beiträge zur Flugfunkkeigenteilung.

— *See* Guider, John W.: The juridical congress on wireless telegraphy at Liége.

— *See* Guider, John W.: The Liege congress of the international committee on wireless telegraphy.

— *See* Krüger, Kurt, und Hans Plendl: Horizontale Strahlungskennlinie einer Kurzwellen-Richtantenne mit gespeistem Reflektor.

— *See* Plendl, Hans: Über den Einfluss der elf-jährigen Sonnenaktivitätsperiode auf die Ausbreitung der Wellen in der drahtlosen Telegraphie.

WIRING plates. *See* Brown, D. Maclean: Inspection of wiring plate angles.

WISSENSCHAFTLICHEN GESELLSCHAFT FÜR LUFTFAHRT. *See* Baumhauer, A. G. von: Vergadering van de W. G. K. te Kiel.

— *See* Carganico, Victor: Kurzer Bericht über die Geschäftliche Sitzung der XX. Ordentlichen Mitglieder-Versammlung der Wissenschaftlichen Gesellschaft für Luftfahrt E. V. (WGL) am 20. Mai 1931, 9. Uhr, in der Aula der Universität Kiel.

— *See* Schrenk, Martin: Jahresschau der Luftfahrwissenschaft.

WITTMANN, K. *See* Gescheit, H. H., und K. Wittmann: Neuzeitlicher verkehrsbau.

WOBBLEMETER. The "Wobblemeter." A new device for measuring human fatigue.

Flight, No. 1197, Vol. 23, No. 49 (Dec. 4, 1931), London, p. 1189, ill.

WOLFF, E. B. Het rapport over het vergaan van het luchtschip R 101.

Het Vliegveld, 15de Jaarg., No. 8 (Aug. 1931), Amsterdam, pp. 286-289, ills., diagr.

WOLLÉ, GEORG. Die Kälteanlage der DVL.

Jahrbuch 1931 der Deutschen Versuchsanstalt für Luftfahrt, 1931, pp. 64-66, ills., diagr.

WOLSKI, KAZIMIERZ. Nowoczesne próby na zmęczenie i opis maszyny Schenck'a zainstalowanej w IBTL.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie, Bulletin No. 6, Warszawa, 1931, pp. 107-116, ills., diagrs.

— Przyczynek do wytrzymałości przekładni zębatych helikoidalnych.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 2, Warszawa, 1930, pp. 10-12, ills.

— Stosowanie tensometrów do prób statycznych płatowców.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne Nr. 4, Warszawa, 1030, pp. 31-33, ills.

— W sprawie warunków technicznych dla drzewa krajowego.

Instytut Badań Technicznych Lotnictwa, Sprawozdania i Prace, Warszawa, 1926, pp. 39-42, diagrs., tabls.

— Wytrzymałość opon.

Instytut Badań Technicznych Lotnictwa, Sprawozdanie kwartalne, Nr. 3, Warszawa, 1930, pp. 36-38, ills.

WOLTERECK, HANS. "Fliegende Güterwagen."

Die Umschau, 35. Jahrg., Heft 31 (1. Aug. 1931), Frankfurt a.M., pp. 621-623, ills.

WOMEN. *See* Holzapfel, Karl Maria, Käte und Rudolf Stocks: Frauen fliegen; sechzehn deutsche pilotinnen in ihren leistungen und abendteuern . . . mit einem geleitwort von Herman Köhl.

— *See* Parachutes: Le rallye-parachute féminin.

WOOD. Quantitative Ermittelung der Schutzwirkung von Anstrichen auf Holz. Zeitschr. Flugt. Motorluftsch., 22. Jahrg., 12. Heft (29, Juni 1931), München und Berlin, p. 378, diagr.

— *See* Garratt, George A.: The mechanical properties of wood; including a discussion of the factors affecting the mechanical properties, working stresses for structural timber, and methods of timber testing.

— *See* Kozanecki, Stefan: Badania świerka gorskiego z Worochty.

— *See* Łaski, Jarosław: Badanie świerka gorskiego z Worochty.

— *See* Schmidt, Erich K. O.: Quantitative Ermittelung der Schutzwirkung von Anstrichen auf Holz.

— *See* Teichmann, Alfred, und Karl Borkmann: Versuche mit langen Bolzen in Holzbauteilen.

— *See* Wigley, W. C. S.: Strength of wooden seaplane hulls (Full sized machines—Third series).

— *See* Wolski, Kazimierz: W sprawie warunków technicznych dla dwzewa krajowego.

WOOD construction. *See* Mayo, William B., and Anthony H. G. Fokker: Metal vs. Wood. Large metal airplanes, by William B. Mayo. An answer to Mr. Mayo, by Anthony H. G. Fokker.

WOOD, DONALD H. Full-scale tests of metal propellers at high tip speeds.

National Advisory Committee for Aeronautics, Report No. 375, June 22, 1931, Washington, U.S. Government Printing Office, 1931, pp. 22, ills., diagrs., tabs.

WOOD, EDWARD S., Jr. Sell obliques. A real demand for high-priced photographs. Will bring in profits.

Airway Age, Vol. 12, No. 2 (Feb. 1931), New York, pp. 142-143, ill.

WOOD, R. MCKINNON, and W. G. A. PERRING. Stresses and strains in airscrews with particular reference to twist.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 1, London, 1931, pp. 347-360, ills., diagrs., Rep. Mem. No. 1274 (Ae. 420.)

WOODRING, I. A. Six miles—straight up!

U.S. Air Services, Vol. 16, No. 12 (Dec. 1931), Washington, D.C., pp. 35-38, ills.

WOODS, BALDWIN MUNGER. *See* Younger, John Elliott, and Baldwin M. Woods: Dynamics of airplanes and airplane structures.

WOODS, RALPH L. The spreading wings of aviation means greater sales.

Airway Age, Vol. 13, No. 5 (Aug. 1, 1931), New York, pp. 137-139.

— Study you social register.

Airway Age, Vol. 12, No. 5 (May 2, 1931), New York, pp. 479-480.

— Unusual uses of airplanes.

Airway Age, Vol. 13, No. 10 (Sept. 5, 1931), New York, pp. 215-216.

WOODWARD NUTT, A. E. *See* Nutt, A. E. Woodward.

WOOLHOPE, ARTUR K. S. Zweiter amerikanischer nationale Segelflugwettbewerb in Elmira.

Luftschau, 4. Jahrg., Nr. 18 (24. Sept. 1931), Berlin, pp. 67-68.

WORLD flight. Beginn der Ozean- und Weltflüge im Jahre 1931.

Luftschau, 4. Jahrg., Nr. 13 (10. Juli 1931), Berlin, pp. 6-7.

WORNER, R. K. *See* Appel, Wm. D., and R. K. Worner: An investigation of cotton for parachute cloth.

WOROCHTA Mountains. *See* Kozanecki, Stefan: Badanie świerka górkiego z Worochty.

— See Łaski, Jarosław: Badanie świerka górkiego z Worochty.

WORTON, F. *See* Waddell, R., and F. Worton: The machining of stainless steel.

WRIGHT, K. V. Experiments on the spinning of a Bristol fighter aeroplane.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 915-921, diagrs., tabl. Rep. Mem. No. 1261. (Ae. 410.)

— *See* Hardy, J. K., and K. V. Wright: The automatic timing of aircraft over a speed course.

WRIGHT, MILTON. Flying to find oil.

Scient. Amer., Vol. 144, No. 3 (March 1931), New York, pp. 174-175, ills.

WRIGHT, S. J. The elasticity of pintsch crystals of tungsten.

Aeronautics, Techn. Rep. Aer. Res. Comm., 1929-1930, Vol. 2, London, 1931, pp. 997-1011, ills., diagrs., tabs. Rep. Mem. No. 1264. (M. 65.)

WRIGHT, THEODORE PAUL. Engineering problems.

Curtiss-Wright Review, Vol. 2, No. 3 (July 1931), New York, pp. 5-8.

— Problems to be solved by the aeronautical engineer.

Aero Digest, Vol. 18, No. 6 (June 1931), New York, pp. 41, 146.

WRIGHT WHIRLWINDS. *See* Thompson, James G.: Engine service and maintenance. Part V—Wright Whirlwinds J-6.

WRINKLING phenomena. *See* Bollenrath, F.: Wrinkling phenomena of thin flat plates subjected to shear stresses.

— *See* Seydal, Edgar: Wrinkling of reinforced plates subjected to shear stresses.

WÜSTENDÖRFER, HANS. Wege und ziele des kommenden weltluftrechts, namentlich im hinblick auf den überseeischen luftverkehr.

Hamburg, Deutsche Schifffahrts-Zeitschrift "Hansa", 1930, pp. 43.

WYNNE, JOHN S. Mercantile aviation.

U.S. Air Services, Vol. 16, No. 4 (April 1931), Washington, pp. 39-40.

Y

YAMAGUCHI, BUNNOSUKE. Action of antioxygens in the oxidation of unsaturated fatty oils. III, IV.

Report of the Aeronautical Research Institute, Tôkyô Imperial University, 74, 75 (Vol. 6, 8, 9), (Oct. 1931), Tôkyô, pp. 219-235, 237-250, diagrs., tabls.

YANCEY, LEWIS A. Aerial navigation and meteorology.

New York, Norman W. Henley Publishing Co., pp. 290, ills.

YARN rope. *See* Stryk, Heinrich von: Rigging lines for parachutes. A suggested alternative to silk or hemp.

YAWING. *See* Baranoff, A. v., and L. Hopf: Combined pitching and yawing motion of airplanes.

YORK, JACK C. Birmingham, Alabama has new port.

Airway Age, Vol. 13, No. 5 (Aug. 1, 1931), New York, pp. 131-133, ill.

YOUNG, ALFRED W. *See* Schey, Oscar William, and Alfred W. Young: A method for reducing the temperature of exhaust manifolds.

YOUNG, CLARENCE M. Activities of the Aeronautics Branch Department of Commerce.

Aero Digest, Vol. 19, No. 6 (Dec. 1931), New York, pp. 27, 96, port.

— Design tendencies in U.S.A. An authoritative examination showing reduction in power loading and increase in wing loading.

Aircraft Engineering, Vol. 3, No. 31 (Sept. 1931), London, pp. 231-232, diagrs., tabls.

— Design trends in approved type airplanes.

Aviation, Vol. 30, No. 8 (Aug. 1931), New York, pp. 465-467. diagrs., tabls.

— Linking the Americas by air.

Aero Digest, Vol. 18, No. 4 (April 1931), New York, pp. 37, 234-235, ill.

— National conference on uniform aeronautic regulatory laws. Purpose of the conference.

Air Law Review, Vol. 2, No. 1 (Jan. 1931), New York, pp. 56-60.

— The old year and the new in aeronautics.

Airway Age, Vol. 12, No. 1 (Jan. 1931), New York, pp. 50-51.

YOUNG, CLARENCE M. Scheduled air transportation today is a sound business endeavor.

U.S. Air Services, Vol. 16, No. 1 (Jan. 1931), Washington, pp. 13-16.

YOUNG, D. C. The airplane's lighting problems.

Aviation, Vol. 30, No. 12 (Dec. 1931), New York, pp. 689-691, ills.

YOUNG, H. E. Radio for the private owner.

Aero Digest, Vol. 19, No. 3 (Sept. 1931), New York, pp. 44-45, ills.

YOUNGER, JOHN ELLIOTT, and NAIRNE F. WARD. Airplane construction and repair; a textbook for airplane mechanics, by John E. Younger . . . with chapters on heat treatment and welding, by Nairne F. Ward.

New York and London, McGraw-Hill Book Company, inc., 1931, pp. viii, 433, ills., diagrs.

YOUNGER, JOHN ELLIOTT, and BALDWIN M. WOODS. Dynamics of airplanes and airplane structures.

New York, J. Wiley & Sons, inc., London, Chapman & Hall, 1931, pp. xiii, 263, ills., diagrs.

YUGOSLAVIA. Development in Yugoslavia.

Flight, No. 1167, Vol. 23, No. 19 (May 8, 1931), London, p. 407, map.

— See Green, E. Ramsay, and L. M. J. Balfour: An invitation to visit Yugoslavia.

YUKON. See Wasson, Everett L.: Flying in the Yukon.

Z

Z. R. S. 4. Essais des groupes moteurs du Z.R.S.4 à Akron.

L'Aéronautique, 13 me année, No. 141 (fév. 1931), Paris, p. 75, ills.

ZAHM, ALBERT FRANCIS. Alexander Goupil, inventor of three-torque airplane. control.

Journal Maryland Academy of Sciences, Vol. II, No. 2 (April 1931), Baltimore, Maryland, pp. 137-143, ills.

— Origin and progress of the Division of aeronautics. (Library of Congress Annual Report of the Library of Congress for fiscal year ending June 30, 1930, Washington pp. 248-259. Publication Aeronautical Division No. 1.

ZALEWSKI. Samolot Zalewski typ W.Z.X. Nr.1.

Instytut Badań Technicznych Lotnictwa, Sprawozdania i Prace, Warszawa, 1926, pp. 16-29, ills., diagrs.

ZAMBECCARI, FRANCESCO. See Caproni, Guasti Timina, a A. Bartarelli: Francesco Zambeccari aeronauta; Bologna 1752-1812.

ZANETTI, M., and C. AVARELLO. Manuale del fotografo d'aeronautica.

Roma, Instituto Polig. dello Stato, Libreria, 1931, pp. 415, ills.

ZEISS. See Lacmann, Otto: Die neue Startmesskammer System DVL-Zeiss.

ZEPPELIN. Wissenschaftl. Arktisfahrt des Graf Zeppelin.

Luftschau, 4. Jahrg., Nr. 15 (10. Aug. 1931), Berlin, p. 33.

ZEPPELIN, FERDINAND ADOLF AUGUST HEINRICH. See Eckener, Hugo: Das werk des grafen Zeppelin.

— See Goldsmith, Margaret Leland: Zeppelin, a biography.

— See Rosenkranz, Hans: Ferdinand graf von Zeppelin; die geschichte eines abenteuerlichen lebens.

— See Schäffer, Ernst: Glück ab; bahnbrecher der lüfte.

ZEPPELINS. *See* Flying: Fallschirm, Flugzeug, Zeppelin.

— *See* Gerville-Réache, Leo: Autour du monde en Zeppelin.

— *See* Hegener, Henri: Een Zeppelin-dienst op Indië.

— *See* Spit, G.: Amsterdam-Batavia met Zeppelins.

— *See* Treusch von Buttler Brandenfels, A.W. Frh. v.: Zeppelene gegen England.

ZHUKOVSKIĭ, NIKOLAĬ EGOROVICH. Théorie tourbillonnaire de l'hélice propulsive, traduit du russe par A. Apostal . . . revu et annoté par W. Wettchinkine . . . Préface de W. Margoulis.

Paris, Gauthier-Villars et Cie. 1929, pp. xxi, 204, ills., tabls., diagrs.

ZIEMBINSKY, M. S. Principes d'établissement, d'aménagement agricole et hydraulique et d'entretien des terrains d'atterrissement.

L'Aérophile, 39e année, No. 12 (15 déc. 1931), Paris, pp. 367-371, ills.

ZINC. *See* Gough, H. J., and H. L. Cox: Further experiments on the behaviour of single crystals of zinc subjected to alternating torsional stresses.

ZINKE, O. *See* Eisner, Fr., G. Sudeck, Rudi Schröer, und O. Zinke: Vergrösserung der effektiven Höhe von Flugzeugschleppantennen.

ZIOLKOWSKY, KONSTANTIN EDUARDOWITSCH. Entwurf eines Ganz-Metall-Luftschiffes für 40 Fluggäste.

Kaluga, U.d.S.S.R., 1930, pp. 90, ills.

— Das Neue Flugzeug.

Kaluga, Staatsverlag, 1930, pp. 38, ill.

— ZIELE der Raumschiffahrt.

Kaluga, Staatsverlag, 1929, pp. 40.

ZOJA, R. Sul calcolo delle molle per valvole dei motori d'aviazione.

L'Aerotecnica, Vol. 11, N. 2 (Feb. 1931), Roma, pp. 183-195, diagr., tabls. English abstract, pp. 251-252.

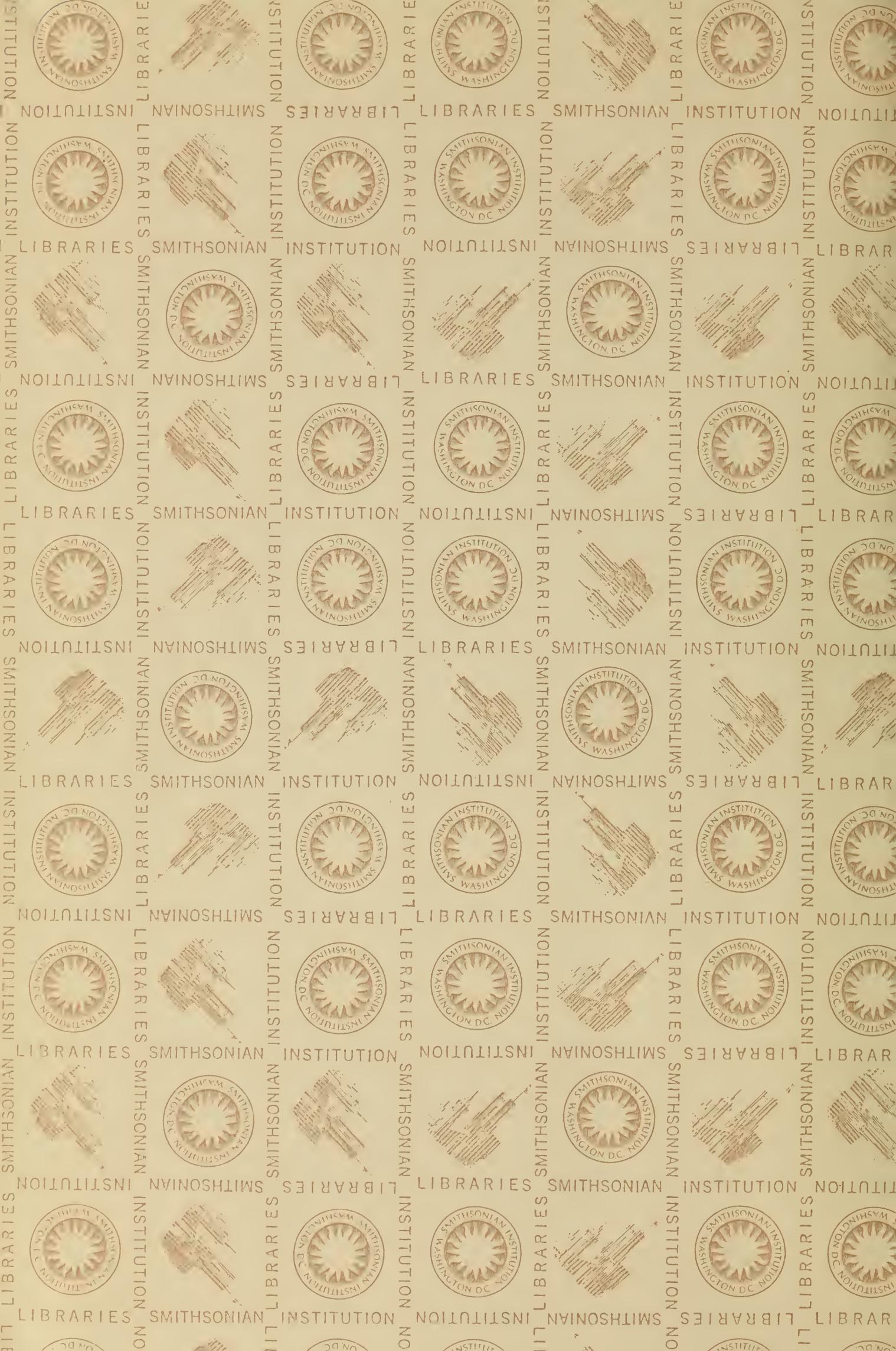
ZRS-4. ZRS-4 nears launching time.

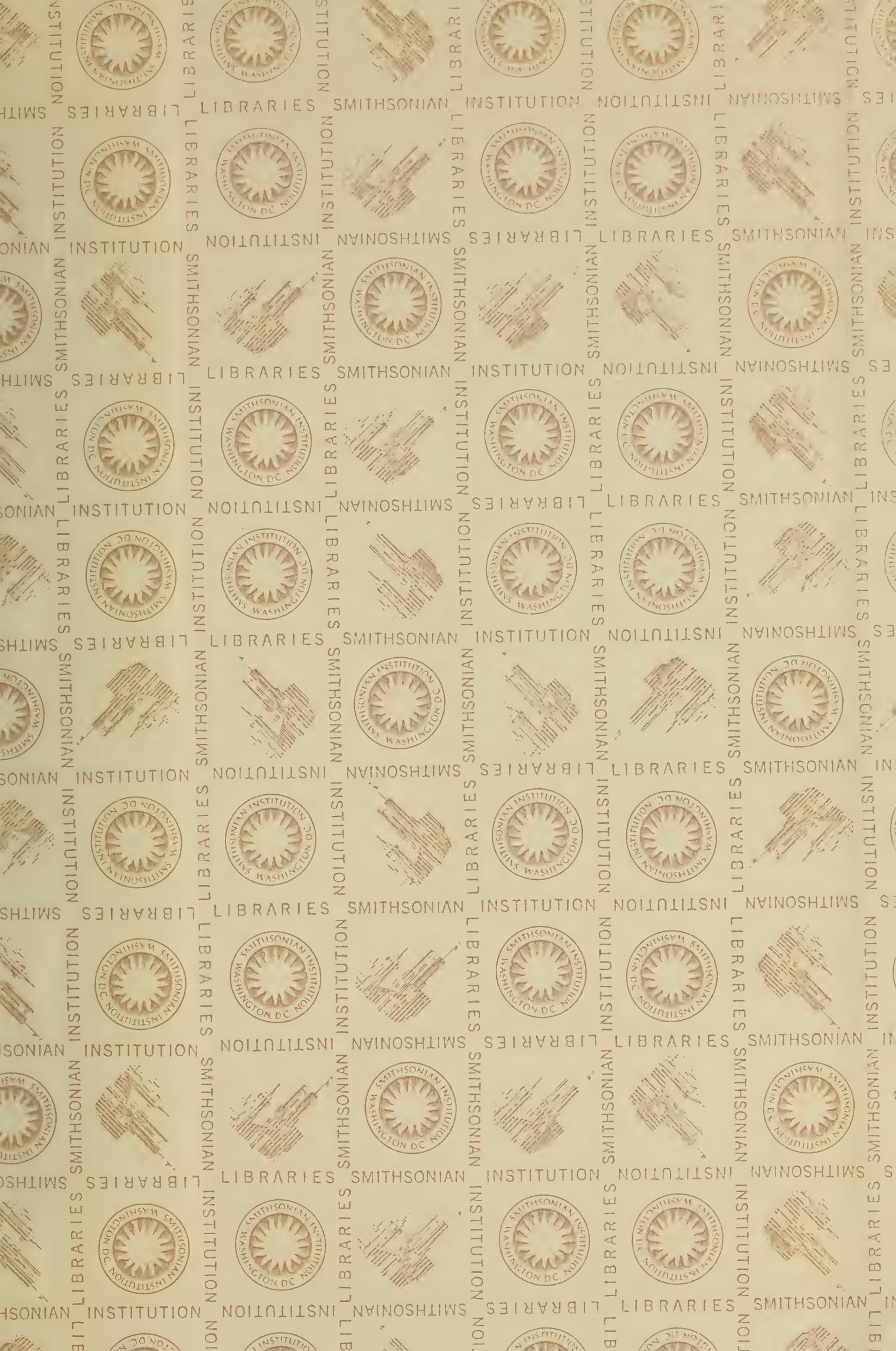
Airway Age, Vol. 13, No. 1 (Jul. 4, 1931), New York, pp. 26-29, ills.

ZUCK, H. E. Engine performance at high compression ratios.

Department of Engineering Research, University of Michigan, Engineering Research Circular, No. 6, March 1931, Ann. Arbor, pp. 33, diagrs., tabls.







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